

Proceedings of the American Academy of Arts and Sciences.

VOL. L. No. 13.—AUGUST, 1915.

RECORDS OF MEETINGS, 1914-15.

OFFICERS AND COMMITTEES FOR 1915-16.

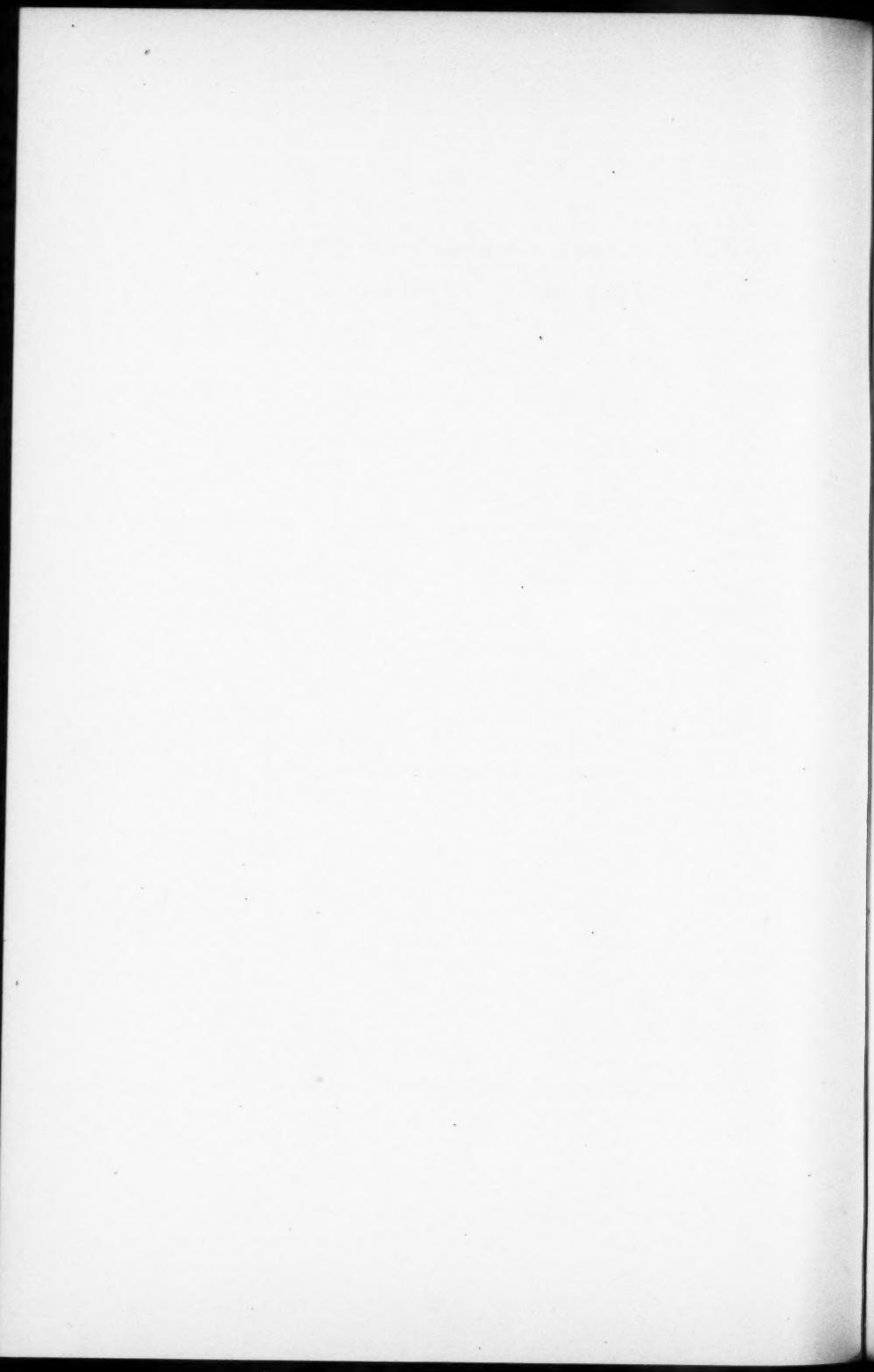
**LIST OF THE FELLOWS AND FOREIGN HONORARY
MEMBERS.**

STATUTES AND STANDING VOTES.

RUMFORD PREMIUM.

INDEX.

(TITLE PAGE AND TABLE OF CONTENTS.)



RECORDS OF MEETINGS.

One thousand and thirty-seventh Meeting.

OCTOBER 14, 1914.—STATED MEETING.

The Academy met at its House.

The PRESIDENT in the Chair.

There were one hundred and twenty-five Fellows and Ladies present.

The President announced that the Council had appointed Professor H. W. Tyler acting Corresponding Secretary during the absence of Professor Hall, and that Professor A. G. Webster was appointed to succeed Professor Tyler as Librarian.

Professor C. R. Cross, Chairman of the Rumford Committee, stated the grounds for the award of the Rumford Medals to Professor Joel Stebbins, and to Dr. William David Coolidge, in substance as follows:

"At its Annual Meeting of May 14, 1913, the Academy voted on the recommendation of the Rumford Committee to award the Rumford Premium to Professor Joel Stebbins of the University of Illinois, for his development of the selenium photometer and its application to astronomical problems.

"Considerably over thirty years ago, the remarkable discovery was made by Bidwell that the substance selenium under certain conditions, sustained a remarkable lowering of its electrical resistance when subjected to the action of light so that if a selenium 'cell' as it was called, was placed in circuit with a battery and galvanometer, a marked deflection of the galvanometer would be observed if the light from a lamp or other source of illumination was thrown upon the cell.

"Very naturally the idea suggested itself that the selenium cell

could be used as a photometer and such cells of which I have one at the Institute of Technology were put upon the market. They did not prove however, to be of practical value since their indications were uncertain and the results unreliable.

"A few years since however, Professor Stebbins undertook a new investigation of the selenium cell with a view to its applications to stellar photometry. By a most careful and painstaking investigation, he was able to discover the necessary conditions of success, finding among other things, that the cell must be kept at a low temperature.

"As a result of these investigations, he finally succeeded in constructing a stellar photometer of exquisite sensitiveness, the accuracy of whose results much exceeded those given by visual observation.

"He has applied the instrument to the study of the light variations of variable stars. In one case, that of the well known variable Algol, the "light curve" determined with the selenium photometer showed a secondary minimum which had not been detected by visual observation. He has also applied the instrument to the study of short period spectroscopic binaries with very important results. By the same method, he has detected and studied the variations in brightness of the pole star."

The President then presented the Medals to Professor Stebbins, who responded, giving a brief account of his researches.

In stating the grounds for the award of the Rumford Medals to Dr. William David Coolidge, Professor Cross said in part, "At its last Annual Meeting, May 13, 1914, the Academy acting on the recommendation of the Rumford Committee, voted to award the Rumford Premium to William David Coolidge for his invention of ductile tungsten and its application in the production of radiation.

"Lamps with carbon filaments were the standard form for many years. The efforts of inventors were unremitting however, to secure a filament which should stand the strong current and high temperature needed to give a satisfactory white light and especially a higher efficiency in operation.

"Wires of tantalum gave quite satisfactory results but the substance tungsten seemed to possess certain advantages. It was

however, an exceedingly brittle metal and hence apparently entirely unsuited for use as the filament of an incandescent lamp.

"Attempts were made however, by various persons abroad and in this country, Dr. Coolidge among them. Their efforts resulted in the production of a filament of tungsten made however, by a paste process giving a filament which stood the action of the current and produced a very white light with a remarkable economy of electrical power. This filament however, was very fragile so that it was difficult to transport such lamps without breaking them and even moderate jarring in the case of the already installed lamps oftentimes destroyed it. It was also impossible accurately to adjust individual lamps to a particular voltage.

"It was to remedy these difficulties that Dr. Coolidge, working in the Research Laboratory of the General Electric Co. at Schenectady, bent his energies.

"He had observed in some experiments that under certain circumstances, the brittle tungsten was so altered as to show some signs of becoming ductile and by a long continued and tedious series of experiments, in which the tungsten was heated and mechanically treated, he was finally able to devise a process by which this typically brittle metal could be rendered ductile so that it could be drawn into a wire of any length and fineness desired. A wire thus made was found to be admirably suited for the purpose of the filament of an incandescent lamp. It could be run at a very high temperature, thus giving a very white light and securing high efficiency. It was not fragile so that no difficulty existed on this score. It could be produced of uniform length and section so that the individual lamps could all be adjusted to run at any desired voltage. The result of this invention was the immediate and universal introduction of the tungsten lamp which we now see everywhere.

"Various other applications of mechanically treated tungsten have been made. Thus it furnishes a reliable and comparatively inexpensive material for use as the electrodes of the spark apparatus of automobiles, and also for use as the target in X-Ray tubes.

"Dr. Coolidge has produced a greatly improved form of X-Ray tube in which both the cathode and the target are of tungsten. Most important however, in the tube is the manner in which the

stream of electrons which constitute the cathode rays is produced. A fine tungsten wire is placed at the cathode with exterior terminals so that this can be heated to any desired temperature. It is a well known fact that a wire thus heated liberates electrons so that when these are set free within the tube at the cathode, the electric force has only to direct and propel the freed electrons to the target without having to do the work of producing them. This process allows of the production of an excessively strong cathode stream and also allows the strength and character of the stream to be regulated by varying the temperature of the tungsten wire.

"The work of Dr. Coolidge has been carried out and brought to success in the Research Laboratory of the General Electric Co.

"It is pleasing to note that in the awards of the Rumford Premium to Professor Stebbins and to Dr. Coolidge respectively, the Academy has recognized both classes of achievement, for the recognition of which, the Rumford endowment was originally made; for purely scientific work of research in light and heat on the one hand; and on the other, for the advancement of the industrial arts within the borders of these branches of science."

The Medals were then presented by the President to Dr. Coolidge, who responded, giving an account of his researches.

It was

Voted, To meet on adjournment, November 11, 1914.

A reception to the recently elected Fellows then took place in the Reading room, where a collation was served.

One thousand and thirty-eighth Meeting.

NOVEMBER 11, 1914.—ADJOURNED STATED MEETING.

The Academy met at its House.

The PRESIDENT in the Chair.

There were forty-five Fellows present.

The following correspondence was presented:—from F. G. Allinson, Maurice Bloomfield, M. T. Bogert, H. A. Bumstead, C. V. Chapin, G. P. Clinton, E. G. Conklin, James DeNormandie, W. J. Drisko, William Duane, G. A. Gordon, L. C. Graton, J. W. Hammond, Alfred Hemenway, B. H. Hill, A. C. Humphreys,

C. C. Hutchins, H. S. Jennings, F. D. Lambert, R. S. Lillie, B. E. Livingston, Jacques Loeb, E. G. Merritt, D. C. Miller, R. A. Millikan, H. N. Morse, H. V. Neal, T. B. Osborne, E. D. Peters, S. C. Prescott, Alfred Rehder, G. A. Reisner, R. G. D. Richardson, M. A. Rosanoff, Ellery Sedgwick, F. C. Shattuck, F. H. Verhoeff, W. C. Wait, Eugene Wambaugh, G. C. Whipple and Owen Wister, accepting Fellowship; from J. H. Wigmore, declining Fellowship; from Otto Backlund, John Briquet, Viktor Goldschmidt, Fritz Haber, Sir Sidney Lee, Max Planck, Ignatz Urban and Eugene Warming, accepting Foreign Honorary Membership; from the family of Hugo Kronecker, announcing his death; from the Secretary of the Smithsonian Institution, announcing the death of F. W. True, the Assistant Secretary; from the nineteenth International Congress of Americanists, to be held in La Paz, the capital of Bolivia, in November.

The Chair announced the following deaths: — Abner Cheney Goodell, Fellow in Class III., Section 3; Francis Humphreys Storer, Fellow in Class I., Section 3; Gardiner Martin Lane, Fellow in Class III., Section 4; Hugo Kronecker, Foreign Honorary Member in Class II., Section 3.

The following letter from Senator Lodge and others, in reply to the letter of the Academy, dated February 4, 1913, addressed to the Senate and House of Representatives of the United States, which was read to the Academy at the meeting of March 12, 1913, was presented: —

TO THE COUNCIL OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES,
American Academy of Arts and Sciences,
28 Newbury St., Boston.

Gentlemen:

The undersigned, members in common of the American Academy of Arts and Sciences and of the American Academy of Arts and Letters, have learned with regret that the former organization has protested to Congress against the bill, now pending, providing for a charter to the latter.

We beg to remind you, very respectfully, that the two institutions are essentially different, covering only in small part similar ground:

the former being concerned, by a very large preponderance of its distinguished membership, its notable library and its useful work, with various aspects of science, a world of intellectual activity with which the latter is not at all concerned. In our judgment the words "Sciences" and "Letters" are appropriately and abundantly descriptive of the chief differences between the two. As for the word "Arts," at the time of the founding of the older body — an institution of long and honorable record — this word was intended, probably, to convey the meaning of the Applied Arts, whereas it is now generally accepted as indicating the Fine Arts, so largely represented in the newer body.

Both Academies include addresses in their proceedings, but there is a wide divergence in subject and character. With this exception, there is not likely to be any aspect of the work of the older institution that will be trespassed upon or even paralleled by the newer, which it is expected will devote itself in new and practical ways to the maintenance and dissemination of standards of creative work in literature, painting, sculpture, architecture and music.

We submit that such similarity of names as now exists is natural and not unusual, and is more than compensated for by the discriminating words above mentioned. We feel sure that there is not likely to be any important confusion of the two organizations.

In view of these considerations, we respectfully and earnestly request that as soon as may conveniently be possible, in the interest of the comity that should exist between important agencies of intellectual progress, you will reconsider the action of your body, with a view to the withdrawal of the protest which has been made to Congress.

We have the honor to remain,

Sincerely yours,

HENRY CABOT LODGE
JAMES FORD RHODES.

I agree to the substance and object of the foregoing,

WOODROW WILSON
WM. M. SLOANE
A. T. HADLEY
THOMAS R. LOUNSBURY
DANIEL C. FRENCH
A. T. MAHAN
ANDREW D. WHITE

B. L. GILDERSLEEVE
GEORGE E. WOODBERRY
GEORGE W. CHADWICK
CHARLES FRANCIS ADAMS

I agree to the substance and object of the foregoing,

A. LAWRENCE LOWELL.

On motion of the Treasurer, it was

Voted, (1) That a Committee, consisting of Hon. Charles W. Eliot and Professor John Trowbridge, be appointed to draft and send a reply to the letter of Senator Lodge and others, declining to withdraw the protest of this Academy against the incorporation by the United States of the "American Academy of Arts and Letters."

(2) That the above Committee be requested to insist on the protest of this Academy against the incorporation of the above-mentioned Society, before any Committee of Congress, and to appear before that Committee in person or by counsel, as may seem to them advisable.

(3) That the Treasurer be requested to advance the sum of one hundred and fifty (\$150.) dollars, or such part thereof as may be called for, for the use of the above Committee.

On motion of A. G. Webster, it was

Voted, That a Committee on the Revision of the Statutes be appointed.

The President appointed Charles P. Bowditch and John Trowbridge as a Committee to revise the Statutes.

The following Communication was given:— "The Zeppelin in Peace and War." By Dr. Louis Bell.

One thousand and thirty-ninth Meeting.

NOVEMBER 23, 1914.—SPECIAL MEETING.

The Academy met at its House, for the purpose of receiving a scientific communication.

The PRESIDENT in the Chair.

There were thirty-three Fellows and twelve guests present.
The following communication was given by Professor William Henry Bragg, F. R. S., of the University of Leeds:— “X-Rays and Crystals.”

After the paper, adjournment was made to the Reading Room, where the usual collation was served.

One thousand and fortieth Meeting.

DECEMBER 9, 1914.

The Academy met at its House.
The PRESIDENT in the Chair.
There were fifty-one Fellows and many guests, including Ladies, present.

The following communication was given:— Professor William M. Davis, “A Shaler Memorial Study of Pacific Coral Reefs.”

Following the communication, adjournment was made to the third floor where a reception was held, given by Professor John E. Wolff, in honor of Professor Davis on his return from a voyage across the Pacific.

One thousand and forty-first Meeting.

JANUARY 13, 1915.—STATED MEETING.

The Academy met at its House.
The PRESIDENT in the Chair.
There were fifty-four Fellows present.

The following letters were presented by the acting Corresponding Secretary:— from G. R. Lyman, Nathan Matthews, and Erwin F. Smith, accepting Fellowship.

The following deaths were announced by the Chair: Charles Sedgwick Minot, Fellow in Class II., Section 3; Alfred Thayer Mahan, Fellow in Class III., Section 3.

The Committee consisting of the President and Dr. C. W. Eliot, reported that a letter was sent to Senator Lodge in answer to the one signed by him and others, which was read to the Academy at the November 11th Meeting, as follows:—

November 28, 1914.

Dear Senator Lodge,

The American Academy of Arts and Sciences has received a letter, dated October 10, 1914, from members of that Academy who are also members of the society desiring national incorporation under the title of the American Academy of Arts and Letters, stating their conviction that the aims and purposes of the latter body do not conflict with those of the older body.

At a large meeting of the American Academy of Arts and Sciences, we were appointed a committee to reply to this letter, and since your name heads the list of signatures, we send this reply to you, reaffirming the protest of this Academy against the use of its name by a new organization with the change of only one word.

The American Academy of Arts and Sciences would not wish to oppose the incorporation of any scientific or literary society, whether the aims of the new body do or do not conflict with those of the older. It does, however, strongly object to the use, in the title of the new body, of five words out of six in the title — American Academy of Arts and Sciences — under which the older body has won prestige and honor during more than one hundred and thirty years, both in this country and in Europe, through its membership, Proceedings and Memoirs.

The reputation and influence of the older body might be confounded with those of the new, and confusion might easily arise and in fact, has already arisen, in correspondence.

We suggest that the new organization use the words "Institute" and "United States," instead of "American"; and we venture to think that the adoption of these changes would furnish a good illustration of the amity and comity which should always exist among learned societies.

Very truly yours,

(Signed) CHARLES W. ELIOT.

(Signed) JOHN TROWBRIDGE.

A letter of protest, which quoted the above letter and also gave a list of past and present distinguished members of the Academy, in the section of Arts and Letters, was sent to the Library Committee of the House of Representatives.

The following letter from Senator Lodge was received by the committee: —

December 2, 1914.

My dear Mr. Eliot:

I have the letter of November 28, signed by you and Mr. Trowbridge, in regard to the name of the American Academy of Arts and Letters. I was elected a member of that Academy many years ago, and my name simply appears as one of its members. I have also been for many years a member of the American Academy of Arts and Sciences, and I confess it never occurred to me that there could be any harm in the name "American Academy of Arts and Letters." We have a National Academy of Sciences and I do not see why any of them should conflict. I fear it is too late now to change the name, for the bill has already passed the Senate, and the name has now been held so long by the American Academy of Arts and Letters that it would be very difficult for them to alter it.

Very truly yours,

(Signed) H. C. LODGE.

The following gentlemen were elected Fellows of the Academy:—

Class I., Section 1 (Mathematics and Astronomy):—

Edward Skinner King, of Cambridge; Carl Otto Lampland, of Flagstaff.

Class I., Section 4 (Technology and Engineering):—

Harrison Prescott Eddy, of Boston; Mordecai Thomas Endicott, of Washington; Hector James Hughes, of Cambridge; Leonard Metcalf, of Boston; Charles Francis Park, of Boston; Frederick Winslow Taylor, of Philadelphia; Joseph Ruggles Worcester, of Boston.

Class II., Section 2 (Botany):—

Irving Widmer Bailey, of Cambridge; Joseph Young Bergen, of Cambridge.

Class II., Section 3 (Zoölogy and Physiology):—

Gilman Arthur Drew, of Woods Hole; Albert Davis Mead, of Providence.

Class III., Section 1 (Theology, Philosophy and Jurisprudence):

William Harrison Dunbar, of Cambridge; Edward Henry Warren, of Boston.

The following gentlemen were elected Foreign Honorary Members:—

Class I., Section 4 (Technology and Engineering):—
Vsevolod Jevgenjevic Timonoff, of Petrograd.

Class III., Section 2 (Philology and Archaeology):—
Arthur Sampson Napier, of Oxford.

Class III., Section 4 (Literature and the Fine Arts):—
Léon Bonnat, of Paris.

The following communications were given:—

Professor Percival Lowell. "A Trans-Neptunian Planet."

Mr. Desmond FitzGerald. "Wanderings in the Philippines."

The following papers were presented by title:—

"A Revision of the Atomic Weight of Praseodymium. The Analysis of Praseodymium Chloride." By G. P. Baxter and O. J. Stewart.

"Cell Division in Trichomonas and Allied Flagellates." By C. A. Kofoid and Olive Swezy.

"Synopsis of the Chinese Species of Pyrus." By Alfred Rehder.

"Planck's Radiation Formula and the Classical Electrodynamics." By D. L. Webster. Presented by G. W. Pierce.

One thousand and forty-second Meeting.

FEBRUARY 10, 1915.

The Academy met at its House.

The PRESIDENT in the Chair.

There were twenty-one Fellows present.

The following letters were presented by the acting Corresponding Secretary: from I. W. Bailey, G. A. Drew, W. H. Dunbar, H. J. Hughes, E. S. King, C. F. Park, F. W. Taylor, E. H. Warren, and J. R. Worcester, accepting Fellowship.

A letter from Edward C. Pickering, in regard to improving methods of securing expert testimony was laid on the table until the next stated meeting.

The Corresponding Secretary announced the transfer by the Council, of Harry Ellsworth Clifford, at his own request, from Section 2, to Section 4, of Class I.

The following Communication was given:— Mr. Andrew McFarland Davis, "Certain Specimens of old Chinese Paper Money dating from 850 A.D. to 1425 A.D."

One thousand and forty-third Meeting.**FEBRUARY 24, 1915.**

The Academy met at its House.

The PRESIDENT in the Chair.

There were thirty-six present including ladies and guests.

The following Communication was given:— Professor George H. Parker, "The Fur-seal Herds of the Pribilof Islands."

One thousand and forty-fourth Meeting.**MARCH 10, 1915.—STATED MEETING.**

The Academy met at its House.

The PRESIDENT in the chair.

There were twenty-one Fellows present.

The following letters were presented:— from J. Y. Bergen, C. O. Lampland, and A. D. Mead, accepting Fellowship; from A. S. Napier, accepting Foreign Honorary Membership; from Professor E. C. Pickering, Chairman of a committee appointed by the American Association for the Advancement of Science, requesting coöperation with the Committee in regard to improved methods of securing expert testimony.

The following resolution was adopted:—

RESOLVED, That the American Academy of Arts and Sciences recognizes the urgent need in the United States of reform in the methods of securing evidence of expert opinion in judicial procedure;

That the Academy approves the efforts of the American Association for the Advancement of Science in this behalf; and,

That the Council is hereby authorized and directed to coöperate with the committee of the American Association for the Advancement of Science in the endeavor to bring about such reform.

The Chair announced the death of John Chipman Gray, Fellow in Class III., Section 1, Vice-President of Class III, from 1902-1911.

On the recommendation of the Council, the following appropriations were made for the ensuing year:—

From the General Fund, \$5300. to be used as follows:—

for House expenses	\$1600.
for Library expenses	1500.
for Books, periodicals and binding	1000.
for Meeting expenses	250.
for Treasurer's office	550.
for General expenses	400.

From the income of the Publication Fund, \$3000. to be used for publication.

From the income of the Rumford Fund \$2910.10 to be used as follows:—

for Research	\$1000.
for Books, periodicals and binding	200.
for Publication	600.
to be used at the discretion of the Committee	1110.10

Also whatever available balance remains unappropriated, for 1914-15.

From the Warren Fund, \$550. to be used at the discretion of the Committee.

An appropriation of \$525.64 was made from the Publication Fund for publication during the present year.

An appropriation of \$50. was made from the income of the General Fund for Expense of Meetings during the present year.

The Committee on the Revision of the Statutes reported as follows:—

The Committee recommends the following changes in Chapter II., Article 4.

- Line 2. Omit "two" and insert "nine."
- " 3. Omit "at that time," and insert "at the time of notification" after the word "Commonwealth."
- " 5. Omit "twelve," and insert "nine."
- " 21. Omit "six," and insert "nine."

The first and second paragraphs of Chapter II., Article 4, will then read as follows:—

"If any person after being notified of his election as Fellow, shall neglect for nine months to accept in writing and to pay his Admission Fee (unless he be absent from the Commonwealth at the

time of his notification) his election shall be void; and if any Fellow resident within fifty miles of Boston shall neglect to pay his Annual Dues for nine months after they are due, provided his attention shall have been called to this Article of the Statutes in the meantime, he shall cease to be a Fellow; but the Council may suspend the provisions of this Article for a reasonable time."

"If any person elected a Foreign Honorary Member shall neglect for nine months after being notified of his election to accept in writing, his election shall be void."

Add the following paragraph to Chapter III, Article 2:—

"Notice shall be sent to every Fellow, not later than September 30th, and January 31st, of each year, calling attention to the fact that the limit of time for sending nominations to the Corresponding Secretary will expire on the fifteenth of the following month."

In Chapter IV, Article 1, lines 9-11. Omit the sentence beginning "At the Annual," and ending with "four years."

Line 12. Omit "subsequent."

The paragraph will then read as follows:—

"There shall be also twelve Councillors, one from each Section of each Class. At each Annual Meeting three Councillors, one from each Class, shall be elected by ballot to serve for the full term of four years and until others are duly chosen and installed. The same Fellow shall not be eligible for two successive terms."

In Chapter XI, Article 1.

Line 1. Omit "four," and insert "eight."

" 2-3. Omit "January, March, May and October," and insert "October, November, December, January, February, March, April, and May."

" 14. Omit "the second or."

" 15. Omit "or both."

" 16. Omit "not appointed for Stated Meetings."

" 16. Omit "any meeting which may be held on the fourth Wednesday," and insert "at said meetings."

Paragraphs 1 and 4 of Chapter XI, Article 1, will then read as follows:

"There shall be annually eight Stated Meetings of the Academy, namely on the second Wednesday of October, November, December, January, February, March, April and May. Only at these

meetings, or at adjournments thereof regularly notified, or at Special Meetings called for the purpose, shall appropriations of money be made, or amendments of the Statutes or Standing Votes be effected."

"A meeting for receiving and discussing literary or scientific communications may be held on the fourth Wednesday of each month, excepting July, August and September, but no business shall be transacted at said meetings."

In Chapter II., Article 5, paragraph 2, line 4, insert after the word "due," the words, "except in the case of Fellows elected at the January meetings, who shall be obliged to pay but one half of such Annual Dues."

On motion, it was,

Voted, That the amendments proposed by the Committee on the Amendments of the Statutes be referred back to the Committee, with instructions to report at a special meeting to be called for the purpose of considering and acting on the amendments, on April 14, 1915.

The Chair appointed the following Councillors to act as Nominating Committee:—

ARTHUR G. WEBSTER, of Class I.,

MERRITT L. FERNALD, of Class II.,

GEORGE F. MOORE, of Class III.

The following communications were given:—

Professor George D. Birkhoff. "The Restricted Problem of Three Bodies."

Professor John Trowbridge. "Note on a Prophecy in Regard to the Future of the English Language."

The following paper was presented by title:—

"Geometry whose Element of Arc is a Linear Differential Form, with Application to the Study of the Minimum Developable." By C. L. E. Moore.

One thousand and forty-fifth Meeting.**MARCH 24, 1915.**

The Academy met in conjunction with the Lawrence Scientific Association at the Franklin Union Hall, 41 Berkeley Street, Boston.

The **PRESIDENT** in the Chair.

There were sixteen Fellows and many members and guests of the Lawrence Scientific Association present.

The following communication was given: "The Gyroscope in Service." By Mr. Elmer A. Sperry.

One thousand and forty-sixth Meeting.**APRIL 14, 1915 — 7.45 P.M.— SPECIAL MEETING.**

The Academy met at its House at a Special Meeting called for the purpose of amending the Statutes.

VICE-PRESIDENT Walcott in the Chair.

There were twenty-three Fellows present.

The Committee on the Amendment of the Statutes reported, advising the adoption of all the proposed amendments:—

On motion, it was

Voted, To amend the Statutes as follows:—

Chapter II., Article 4, Paragraph 1, to read:—

"If any person, after being notified of his election as Fellow, shall neglect for six months to accept in writing and to pay his Admission Fee (unless he be absent from the Commonwealth at the time of his notification) his election shall be void; and if any Fellow resident within fifty miles of Boston shall neglect to pay his Annual Dues for six months after they are due, provided his attention shall have been called to this Article of the Statutes in the meantime, he shall cease to be a Fellow; but the Council may suspend the provisions of this Article for a reasonable time."

Chapter II., Article 5, Paragraph 2, to read:—

"Every Fellow resident within fifty miles of Boston shall, and others may, pay such Annual Dues, not exceeding fifteen dollars, as shall be voted by the Academy at each Annual Meeting, when

they shall become due, except in the case of Fellows elected at the January meetings, who shall be obliged to pay but one half of such Annual Dues in the year in which they are elected;”

Chapter III., Article 2, Paragraph 3, to be added:—

“Notice shall be sent to every Fellow having the right to vote, not later than the thirtieth of September or the thirty-first of January, of each year, calling attention to the fact that the limit of time for sending nominations to the Corresponding Secretary will expire on the fifteenth of the following month.”

Chapter IV., Article 1, Paragraph 2, to read:—

“There shall be also twelve Councillors, one from each Section of each Class. At each Annual Meeting three Councillors, one from each Class, shall be elected by ballot to serve for the full term of four years and until others are duly chosen and installed. The same Fellow shall not be eligible for two successive terms.”

Chapter XI., Article 1, Paragraph 1, to read:—

“There shall be annually eight Stated Meetings of the Academy, namely, on the second Wednesday of October, November, December, January, February, March, April and May. Only at these meetings, or at adjournments thereof regularly notified, or at Special Meetings called for the purpose, shall appropriations of money be made, or amendments of the Statutes or Standing Votes be effected.”

Chapter XI., Article 1, Paragraph 4, to read:—

“A meeting for receiving and discussing literary or scientific communications may be held on the fourth Wednesday of each month, excepting July, August and September, but no business shall be transacted at said meetings.”

The meeting then adjourned.

One thousand and forty-seventh Meeting.

APRIL 14, 1915 — 8 P. M.— STATED MEETING.

The Academy met at its House.

VICE-PRESIDENT Walcott in the Chair.

There were twenty-five Fellows present.

The following letters were presented by the acting Correspond-

ing Secretary:—from V. J. Timonoff, accepting Foreign Honorary Membership; from Leonard Metcalf, declining Fellowship for himself and H. P. Eddy; from F. H. Newell, declining Fellowship; a circular from C. R. Cross, chairman of Sub-Committee on Research Funds, asking information regarding Research Funds of the Academy.

The following deaths were announced by the Chair:—Charles Francis Adams, Fellow in Class III., Section 3; Frederick Winslow Taylor, Fellow in Class I., Section 4; Thomas Raynesford Lounsbury, Fellow in Class III., Section 2.

The following Communication was given:—“The Effects of Radiation on the Eye.” By Dr. F. H. Verhoeff and Dr. Louis Bell.

The following papers were presented by title:—“The Mechanics of Telephone-Receiver Diaphragms, as derived from their Motional-Impedance Circles.” By A. E. Kennelly and H. A. Affel.

“A Critical Discussion of the Crystal Forms of Calcite.” By H. P. Whitlock.

One thousand and forty-eighth Meeting.

APRIL 28, 1915.—SPECIAL MEETING.

The Academy met at its House.

The **PRESIDENT** in the Chair.

There were fifteen Fellows and four guests present.

The following communication was given:—

Col. W. R. Livermore, “The Turks and Their Predecessors.”

One thousand and forty-ninth Meeting.

MAY 12, 1915.—ANNUAL MEETING.

The Academy met at its House.

VICE-PRESIDENT Thomson in the Chair.

There were fifty Fellows present.

The following invitation was presented: from the Johns Hopkins University, requesting the presence of a representative of

the Academy at the inauguration of Frank Johnson Goodnow, LL.D., as President, May 20, 1915.

The following report of the Council was presented:—

Since the last report of the Council there have been reported the deaths of nine Fellows:—Abner Cheney Goodell, Francis Humphreys Storer, Gardiner Martin Lane, Charles Sedgwick Minot, Alfred Thayer Mahan, John Chipman Gray, Charles Francis Adams, Frederick Winslow Taylor, Thomas Raynesford Lounsbury; and of one Foreign Honorary Member:—Hugo Kronecker.

Sixty Fellows have been elected, of which number four have declined Fellowship, two have not yet accepted Fellowship.

Twelve Foreign Honorary Members have been elected, of which number, two have not yet accepted Membership.

The roll now includes 434 Fellows and 64 Foreign Honorary Members.

The annual report of the Treasurer was read, of which the following is an abstract:—

GENERAL FUND.

Receipts.

Balance, April 1, 1914	\$219.10
Investments	2,923.46
Assessments	2,920.00
Admissions	570.00
Sundries	70.67
	<hr/>
	\$6,703.23

Expenditures.

Expenses of Library	\$2,671.81
Expense of House	1,578.74
Expense of Meetings	226.79
Treasurer	207.03
Insurance	345.14
General Expense of Society	400.81
Charged to cancel premium on Bonds . .	25.00
Income transferred to principal	246.72
	<hr/>
Balance, April 1, 1915	1,001.19
	<hr/>
	\$6,703.23

RUMFORD FUND.

Receipts.

Balance April 1, 1914	\$1,763.83
Investments	3,148.01
Sale of Publications	7.50
Grant returned	250.00

Expenditures.

Research	\$700.00
Books, Periodicals and Binding	187.86
Publication	332.09
Medals	456.00
Sundries	3.50
Income transferred to principal	155.41

Balance, April 1, 1915	\$3,334.48
----------------------------------	------------

C. M. WARREN FUND.

Receipts.

Balance, April 1, 1914	\$1,391.02
Investments	1,388.19

Expenditures

Research	\$553.00
Vault, rent, part	4.00
Income transferred to principal	32.57

Balance, April 1, 1915	2,189.64
----------------------------------	----------

\$2,779.21.

PUBLICATION FUND.

Receipts.

Balance, April 1, 1914	\$5.06
Appleton Fund Investments	819.33
Centennial Fund investments	2,380.65
Sale of Publications	621.84

Expenditures.

Publications	\$1,982.50
Vault, rent, part	12.50
Income transferred to principal	161.84
	<hr/>
Balance, April 1, 1915	1,670.04
	<hr/>
	\$3,826.88

May 12, 1915.

The following reports were also presented:—

REPORT OF THE LIBRARY COMMITTEE.

The Librarian begs to submit the following report:—

During the year, 68 books have been borrowed from the Library by 24 persons, including 11 Fellows and 3 libraries. All but 5 books have been returned for examination, or satisfactorily accounted for.

The number of bound volumes on the shelves at the time of the last report was 33,675. 612 volumes have been added during the past year, making the number now on the shelves, 34,287. This includes 81 purchased from the income of the General Fund, 28 from that of the Rumford Fund, and 503 received by gift or exchange. The pamphlets added during the year number 479.

The expenses charged to the Library during the financial year are:—

Salaries	\$1,644.12
Binding:—	
General Fund	553.90
Rumford Fund	54.75
Purchase of periodicals and books:—	
General Fund	439.07
Rumford Fund	133.11
Miscellaneous	34.72
	<hr/>
Total	\$2,859.67

A. G. WEBSTER, *Librarian.*

May 13, 1915.

REPORT OF THE RUMFORD COMMITTEE.

During the present year grants have been made in aid of research as follows:—

November 11, 1914, to Professor P. W. Bridgman, in aid of his researches on the "Thermal Effects of High Pressures." (additional) \$150

To Professor Frederick A. Saunders, in aid of his research "On the Spectra of Metallic Vapors." 100

To Professor Frederick Palmer, Jr., in aid of his research on the "Properties of Light of Extremely Short Wave Lengths." 200

To Professor Henry Crew, in aid of his research on the "Specific Heat of Liquids." 200

May 12, 1915, to Professor Joel Stebbins, in aid of his research with his improved photo-electric cell photometer upon variable stars. 140

December 9, 1914. It was voted to appropriate \$300 for the purchase of a refrigerating apparatus for the Academy, the same to be loaned to Professor C. A. Kraus, for his research on "Solutions in Liquid Ammonia" for the term of three years.

It was also voted that \$300 be appropriated for the purchase of a motor generator for the Academy, the same to be loaned to Dr. H. P. Hollnagel, for his research "An Investigation of the Extreme Infrared Portion of the Spectrum" for the term of three years.

January 13, 1915. It was voted "That it is the opinion of the Rumford Committee that in case of the purchase of standard apparatus which may be of use in various researches such apparatus should be purchased by the Academy and loaned to the grantee for such period as may be desirable."

February 10, 1915. It was voted to adopt the following circular which is to be sent in print to all persons to whom grants shall be made.

AMERICAN ACADEMY OF ARTS AND SCIENCES.

RUMFORD FUND.

The following regulations regarding grants from the Rumford Fund have been made by the Rumford Committee.

All apparatus purchased through appropriations from the Rumford

Fund is the property of the American Academy of Arts and Sciences and is to be returned to it when the research for which it was provided is completed, unless otherwise directed by the Committee.

In case of the purchase of standard apparatus which might be of use in various researches, it is the policy of the Committee to purchase it directly and to loan it to the grantee for such period as may be desirable.

Recipients of grants for investigations are expected to report annually to the Committee as to the progress of the work for which the grant was made.

Researches carried on with aid from the Rumford Fund may be published in any place or form with the proviso that due recognition be made of the grant as from the Rumford Fund of the American Academy of Arts and Sciences. A complete copy of every publication shall be presented to the Academy.

Persons making application for grants from the Rumford Fund are expected to inform the Committee of similar applications made by them for grants from other funds in aid of the same research or of related researches.

Applications for grants should be made to the Chairman of the Rumford Committee, Care of the American Academy of Arts and Sciences, 28 Newbury St., Boston.

February 10, 1915.

The replicas which remain to be made of Rumford Medals awarded prior to the date at which the striking of a bronze replica was instituted are under construction and it is expected that they will all be finished during the summer.

Reports of progress in their several researches have been received from the following persons: Messrs. C. G. Abbot, P. W. Bridgman, W. W. Campbell, A. L. Clark, D. F. Comstock, H. Crew, E. B. Frost, H. P. Hollnagel, L. R. Ingersoll, N. A. Kent, F. G. Keyes, L. V. King, C. A. Kraus, A. B. Lamb, G. N. Lewis, E. L. Nichols, C. L. Norton, F. Palmer, Jr., J. A. Parkhurst, T. W. Richards, G. W. Ritchey, F. A. Saunders, W. O. Sawtelle, A. W. Smith, F. W. Very.

Nine grantees have failed to respond to the request of the Chairman of the Committee for the usual report of progress.

The following papers have been published in Volume 50 of the Proceedings of the Academy with aid from the Rumford Fund since the last Annual Meeting.

- No. 1. "Types of Abnormal Color Vision," by Louis Bell.
 No. 4. "On Electric Conduction and Thermoelectric Action in Metals," by Edwin H. Hall.
 No. 6. "Planck's Radiation Formula and the Classical Electrodynamics," by David L. Webster.

At the meeting of February 10, 1915, it was unanimously voted for the first time and at the meeting of March 10, 1915, for the second time, to recommend to the Academy the award of the Rumford Premium to Charles G. Abbot for his researches on Solar Radiation.

CHARLES R. CROSS, *Chairman.*

May 12, 1915.

REPORT OF THE C. M. WARREN COMMITTEE.

The C. M. Warren Committee begs to submit the following report: At the beginning of the year 1914-1915, the Committee had at its disposal a balance of \$585 from previous appropriations by the Academy, and the sum of \$800 was appropriated for the use of the Committee at the meeting of March, 1914.

During the year grants have been made as follows: —

To Professor George H. Burrows, for a study of equilibria in certain organic reactions, including the determination of free energy of formation of the compounds involved	\$250
To Professor Roger F. Brunel, for the purchase of a polarimeter, with accessories, to be used in connection with a study of the equilibria between organic compounds, with special reference to the affinities of certain organic radicals (not to exceed)	400
To Professor Charles A. Kraus, for the purchase of a special high grade balance to be used in an investigation of the properties of very dilute solutions	300

The two last-named grants for the purchase of apparatus have been made with the provision that these pieces of apparatus are to be the property of the Academy, and are loaned to the investigators in question for the period of three years, or for such longer or shorter period as may be shown to be required for the completion of the investigations for which they were purchased. This policy is in line with that adopted by other Committees or Trustees having charge of research funds, and it is believed that it will tend to increase the effectiveness of the Warren Fund, and will also bring about a larger

sense of responsibility on the part of the investigators with respect to the care and efficient use of such apparatus, without in any way hindering the progress of their work.

The Committee has also made an appropriation of \$133.50 for the reprinting of two hundred copies of each of five papers covering investigations by Professor Charles F. Mabery, for which grants have previously been made from the Warren Fund. The supply of these papers has been exhausted, and requests are still made to the Librarian for them, either separately or to complete sets of the Proceedings.

At the meeting of the Academy in March, 1915, a further appropriation of \$550 was made for the use of the Committee. The balance in its hands at the present time is \$651.50.

Reports have been received from most of those who have unfinished investigations under way for which grants have been made. No papers are reported as having been published during the year, but several investigations are apparently nearing completion.

Respectfully,

H. P. TALBOT, *Chairman.*

May 12, 1915.

REPORT OF THE PUBLICATION COMMITTEE.

The Committee on Publication has the honor to report as follows: —

Between April 1, 1914, and April 1, 1915, there were published one number of Volume XLIX (No. 12) and eight numbers of Volume L, of the Proceedings, aggregating 272 pages. This is much below the average number of pages usually printed per year. There are, however, four papers of considerable length in press, and there is also a large quantity of manuscript on hand, which will bring the present volume about up to the standard size.

There was available for the use of the Publication Committee, an unexpended balance from last year of \$5.06, an appropriation of \$2500, an additional appropriation of \$525.64, and a sum of \$294.46 from the sales of publications to March 2 — in all \$3,325.16 from the Publication Fund and sales. Bills against this appropriation to the amount of \$1,982.50 have been approved by the Chairman. This leaves an unexpended balance of \$1,342.66 plus the amount on hand for sales of publications from March 2 to April 1.

Bills aggregating \$332.09 for the publication of papers on light and

heat have been submitted to the Rumford Committee for their approval in accordance with authorization of the Chairman of the Rumford Committee.

Respectfully,

G. W. PIERCE, *Chairman.*

May 12, 1915.

REPORT OF THE HOUSE COMMITTEE.

The House Committee submits the following report for the year 1914-15:—

The Committee had at its disposal at the beginning of the year a balance of \$28.86. The appropriation by the Academy for the year was \$1,800, and there has been received, for the use of the rooms, from the Colonial Society \$15, from the Boston Board of Trade \$36, and from the American Oriental Society \$5, making the total amount at the disposal of the Committee \$1,884.86.

The total expenditure for the year is \$1,578.74, leaving an unexpended balance of \$306.12. The expenditures may be summarized as follows:—

Janitor	\$750.00
Electricity { A. Light	69.20
B. Power	49.60
Gas	10.64
Water	8.00
Telephone	64.03
Coal { Furnace	350.00
Water Heat	30.50
Ash tickets	7.00
Care of Elevator	35.03
Ice	14.40
Janitor's materials	13.85
Furnishings	44.57
Upkeep	131.92
 Total expenditure	 \$1,578.74

Of the expenditure for "Up-keep" \$50 was paid out for changes in the elevator-well, made at the demand of the State officials, in compliance with recent legislative enactments, which are more stringent

than formerly with respect to the protection of laborers who might be employed in connection with the repairs or maintenance of the elevator. Your Committee believes that the Academy Building is in good condition at present.

During the year the Academy has held twelve meetings in the Building. Other meetings have been held as follows: The Colonial Society, four; the Harvard Biblical Club, six; the Harvard-Technology Chemical Club, three; and the Boston Board of Trade has had the use of the hall only, for twelve lectures on agricultural subjects. There has been the usual use of the small rooms by the Council and Committees.

The arrangement of the two previous years with respect to the services of the janitor has been continued, and the building has been open during the same hours each week as during the past years.

The Committee takes much pleasure in expressing once more its sense of obligation to Mrs. Holden, the Assistant Librarian, for her constant and efficient co-operation in all that the Committee has undertaken.

Respectfully,

H. P. TALBOT, *Chairman.*

May 12, 1915.

On the recommendation of the Rumford Committee, it was

Voted, To award the Rumford Premium to Charles Greeley Abbot, of Washington, D. C., for his researches on Solar Radiation.

On motion of the Treasurer, it was

Voted, That the Annual Assessment be ten (\$10) dollars.

On the recommendation of the C. M. Warren Committee, it was

Voted, To make an additional appropriation of \$800 from the income of the C. M. Warren Fund for the use of the Committee.

Whereas it was deemed advisable by the executors under the will of Francis Amory, after consultation with the representatives of the residuary legatee and the other principal legatees mentioned in the will, to settle with the heirs of the said Amory in order to avoid a contest of the will; and whereas a settlement has been effected with the said heirs upon terms satisfactory to the said legatees and said executors; it was

Voted, That the American Academy of Arts and Sciences contribute to the amount of the settlement made with the heirs of the

late Francis Amory and expenses connected therewith, twenty-five hundred dollars (\$2500.), by accepting twenty-two thousand five hundred dollars (\$22,500.) in lieu of the legacy of twenty-five thousand dollars (\$25,000.) given to it by the will of the said Amory. It was also

Voted, That the Treasurer of the Academy be authorized to receive and receipt for said legacy.

The annual election resulted in the choice of the following officers and committees:—

HENRY P. WALCOTT, *President.*

ELIHU THOMSON, *Vice-President for Class I.*

WILLIAM M. DAVIS, *Vice-President for Class II.*

A. LAWRENCE LOWELL, *Vice-President for Class III.*

HARRY W. TYLER, *Corresponding Secretary.*

WILLIAM WATSON, *Recording Secretary.*

HENRY H. EDES, *Treasurer.*

ARTHUR G. WEBSTER, *Librarian.*

Councillors for Four Years.

HARVEY N. DAVIS, of Class I.

BENJAMIN L. ROBINSON, of Class II.

FRED N. ROBINSON, of Class III.

Finance Committee.

HENRY P. WALCOTT,

JOHN TROWBRIDGE,

GEORGE V. LEVERETT.

Rumford Committee.

CHARLES R. CROSS

ELIHU THOMSON,

EDWARD C. PICKERING

LOUIS BELL,

ARTHUR G. WEBSTER,

ARTHUR A. NOYES,

THEODORE LYMAN.

C. M. Warren Committee.

HENRY P. TALBOT,

GREGORY P. BAXTER,

WALTER L. JENNINGS,

ARTHUR A. NOYES,

CHARLES L. JACKSON,

ARTHUR D. LITTLE,

WILLIAM H. WALKER.

Publication Committee.

EDWARD V. HUNTINGTON, of Class I.
WALTER B. CANNON, of Class II.
ALBERT A. HOWARD, of Class III.

Library Committee.

ARTHUR G. WEBSTER,
HARRY M. GOODWIN, of Class I.
SAMUEL HENSHAW, of Class II.
WILLIAM C. LANE, of Class III.

House Committee.

HAMMOND V. HAYES, LOUIS DERR,
WILLIAM S. BIGELOW.

Committee on Meetings.

THE PRESIDENT, THE RECORDING SECRETARY,
WILLIAM M. DAVIS, EDWIN B. WILSON,
GEORGE F. MOORE.

Auditing Committee.

ELIOT C. CLARKE, WORTHINGTON C. FORD.

The following gentlemen were elected Fellows of the Academy:—

Class I., Section 1 (Mathematics and Astronomy):—

Leonard Eugene Dickson, of Chicago Ill.; Philip Fox, of Evans-
ton, Ill.; Frank Lauren Hitchcock, of Boston; Dunham Jackson,
of Cambridge.

Class I., Section 2 (Physics):—

Willian David Coolidge, of Schenectady, N. Y.

Class I., Section 3 (Chemistry):—

George Shannon Forbes, of Cambridge; Charles August Kraus,
of Worcester; Warren Kendall Lewis, of Newton; Miles Standish
Sherrill, of Brookline.

Class I., Section 4 (Technology and Engineering):—

John Joseph Carty, of New York, N. Y.; Alfred Craven, of
New York, N. Y.

Class II., Section 1 (Geology, Mineralogy and Physics of the Globe):—

Wallace Walter Atwood, of Cambridge; Joseph Barrell, of New Haven, Conn.; John Mason Clarke, of Albany, N. Y.; Andrew Cowper Lawson, of Berkeley, Cal.; Robert Wilcox Sayles, of Newton; Charles Schuchert, of New Haven, Conn.; Bailey Willis, of Washington, D. C.; Samuel Wendell Williston, of Chicago, Ill.; Frederick Eugene Wright, of Washington, D. C.

Class II., Section 2 (Botany):—

Thomas Jonathan Burrill, of Urbana, Ill.; Lincoln Ware Riddle, of Wellesley.

Class II., Section 3 (Zoölogy and Physiology):—

Glover Morrill Allen, of Boston; Charles Thomas Brues, of Boston; Hermon Carey Bumpus, of Tufts College; Hubert Lyman Clark, of Cambridge; Alexander Forbes, of Milton; Ernest Gale Martin, of Cambridge; John Charles Phillips, of Wenham; Arthur Wisswald Weyses, of Boston; Frederick Adams Woods, of Brookline; Robert Mearns Yerkes, of Cambridge.

Class II., Section 4 (Medicine and Surgery):—

Reid Hunt, of Boston.

Class III., Section 1 (Theology, Philosophy and Jurisprudence):

Edward Staples Drown, of Cambridge; William Dewitt Hyde, of Brunswick, Me.; William Caleb Loring, of Boston; Samuel Walker McCall, of Winchester; John Winthrop Platner, of Cambridge.

Class III., Section 2 (Philology and Archaeology):—

Edward Washburn Hopkins, of New Haven, Conn.; Aleš Hrdlička, of Washington, D. C.; Carl Newell Jackson, of Cambridge; Kirsopp Lake, of Cambridge; Henry Roseman Lang, of New Haven, Conn.; Bernadotte Perrin, of New Haven, Conn.

Class III., Section 3 (Political Economy and History):—

Richard Henry Dana, of Cambridge; Edward Bangs Drew, of Cambridge; William Roscoe Thayer, of Cambridge.

Class III., Section 4 (Literature and the Fine Arts):—

James Phinney Baxter, of Portland, Me.; James Kendall Hosmer, of Minneapolis, Minn.; Samuel Eliot Morison, of Boston.

The following gentlemen were elected Foreign Honorary Members:—

Class I., Section 1 (Mathematics and Astronomy):—

Charles Jean de la Vallée Poussin, of Louvain, Belgium; Joseph Norman Lockyer, London, England.

Class I., Section 2 (Physics):—

Ernest Rutherford, of Manchester, England.

Class I., Section 4 (Technology and Engineering):—

Guglielmo Marconi, of Rome, Italy.

Class II., Section 1 (Geology, Mineralogy and Physics of the Globe):—

Charles Barrois, of Lille, France; Johan H. L. Vogt, of Trondhjem, Norway.

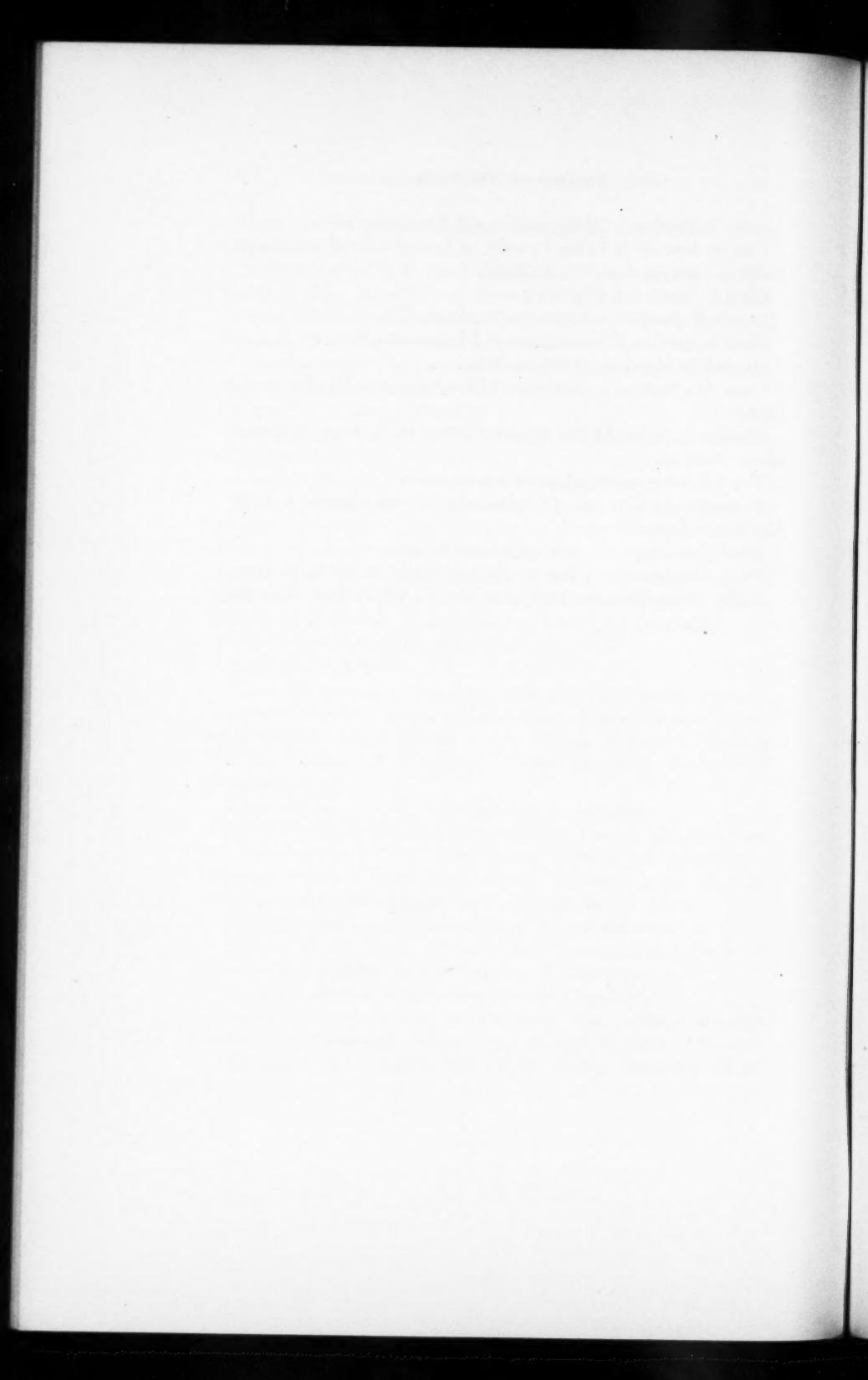
The following communication was given:—

Professor A. C. Lane, "Explanation of the Masses of Early Non-Fossiliferous Strata."

The following papers were presented by title:—

"The Glacial-control Theory of Coral Reefs." By R. A. Daly.

"New Indo-Malayan Laboulbeniales." By Roland Thaxter.



American Academy of Arts and Sciences

OFFICERS AND COMMITTEES FOR 1915-16.

PRESIDENT.

HENRY P. WALCOTT.

VICE-PRESIDENTS.

Class I.

ELIHU THOMSON,

Class II.

WILLIAM M. DAVIS,

Class III.

A. LAWRENCE LOWELL.

CORRESPONDING SECRETARY.

HARRY W. TYLER.

RECORDING SECRETARY.

WILLIAM WATSON.

TREASURER.

HENRY H. EDES.

LIBRARIAN.

ARTHUR G. WEBSTER.

COUNCILLORS.

Class I.

JAMES F. NORRIS,

Class II.

GEORGE H. PARKER,

Class III.

FRANK W. TAUSSIG.

Terms expire 1916.

DESMOND FITZGERALD,

JOHN COLLINS WARREN,

WILLIAM S. BIGELOW.

Terms expire 1917.

FREDERICK S. WOODS,

ALFRED C. LANE,

SAMUEL WILLISTON.

Terms expire 1918.

HARVEY N. DAVIS,

BENJAMIN L. ROBINSON,

FRED N. ROBINSON.

Terms expire 1919.

COMMITTEE OF FINANCE.

HENRY P. WALCOTT,

JOHN TROWBRIDGE,

GEORGE V. LEVERETT.

RUMFORD COMMITTEE.

CHARLES R. CROSS, *Chairman,*

EDWARD C. PICKERING,

ARTHUR G. WEBSTER,

ELIHU THOMSON,

LOUIS BELL,

ARTHUR A. NOYES,

THEODORE LYMAN.

C. M. WARREN COMMITTEE.

HENRY P. TALBOT, *Chairman,*

WALTER L. JENNINGS,

CHARLES L. JACKSON,

GREGORY P. BAXTER,

ARTHUR A. NOYES,

ARTHUR D. LITTLE,

WILLIAM H. WALKER.

COMMITTEE OF PUBLICATION.

EDWARD V. HUNTINGTON, of Class I, *Chairman,*

WALTER B. CANNON, of Class II, ALBERT A. HOWARD, of Class III.

COMMITTEE ON THE LIBRARY.

ARTHUR G. WEBSTER, *Chairman,*

HARRY M. GOODWIN, of Class I,

SAMUEL HENSHAW, of Class II,

WILLIAM C. LANE, of Class III.

AUDITING COMMITTEE.

ELIOT C. CLARKE,

WORTHINGTON C. FORD.

HOUSE COMMITTEE.

LOUIS DERR,

HAMMOND V. HAYES, *Chairman,* WILLIAM S. BIGELOW.

COMMITTEE ON MEETINGS.

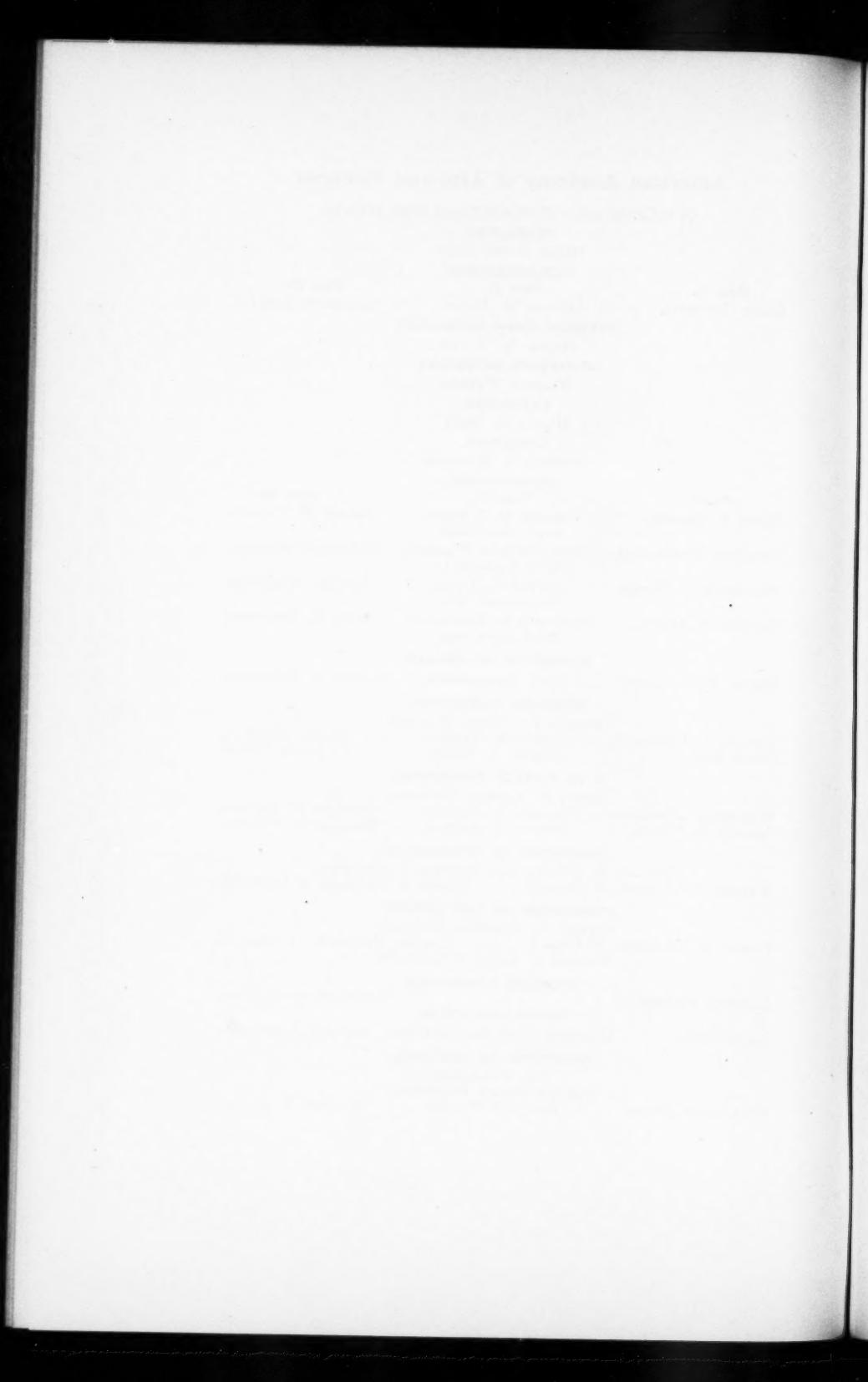
THE PRESIDENT,

THE RECORDING SECRETARY,

EDWIN B. WILSON,

GEORGE F. MOORE.

WILLIAM M. DAVIS,



LIST
OF THE
FELLOWS AND FOREIGN HONORARY MEMBERS.

(Corrected to July 1, 1915.)

FELLOWS.—471.

(Number limited to six hundred.)

CLASS I.—*Mathematical and Physical Sciences*.—183.

SECTION I.—*Mathematics and Astronomy*.—40.

George Russell Agassiz	.	.	.	.	Boston
Solon Irving Bailey	.	.	.	.	Cambridge
Edward Emerson Barnard	.	.	.	.	Williams Bay, Wis.
George David Birkhoff	.	.	.	.	Cambridge
Charles Leonard Bouton	.	.	.	.	Cambridge
Ernest William Brown	.	.	.	.	New Haven, Conn.
Sherburne Wesley Burnham	.	.	.	.	Williams Bay, Wis.
William Elwood Byerly	.	.	.	.	Cambridge
William Wallace Campbell	.	.	.	.	Mt. Hamilton, Cal.
Julian Lowell Coolidge	.	.	.	.	Cambridge
George Cary Comstock	.	.	.	.	Madison, Wis.
Leonard Eugene Dickson	.	.	.	.	Chicago, Ill.
Philip Fox	.	.	.	.	Evanston, Ill.
Fabian Franklin	.	.	.	.	New York, N. Y.
Edwin Brant Frost	.	.	.	.	Williams Bay, Wis.
Frank Lauren Hitchcock	.	.	.	.	Boston
Edward Vermilye Huntington	.	.	.	.	Cambridge
Dunham Jackson	.	.	.	.	Cambridge
Edward Skinner King	.	.	.	.	Cambridge
Carl Otto Lampland	.	.	.	.	Flagstaff, Ariz.
Percival Lowell	.	.	.	.	Boston

Emory McClintock	New York, N. Y.
Joel Hastings Metcalf	Winchester
Clarence Lemuel Elisha Moore	Boston
Eliakim Hastings Moore	Chicago, Ill.
Edward Charles Pickering	Cambridge
William Henry Pickering	Cambridge
Charles Lane Poor	New York, N. Y.
Roland George Dwight Richardson	Providence, R. I.
Arthur Searle	Cambridge
George Mary Searle	Berkeley, Cal.
Vesto Melvin Slipher	Flagstaff, Ariz.
John Nelson Stockwell	Cleveland, O.
William Edward Story	Worcester
Henry Taber	Worcester
Harry Walter Tyler	Boston
Robert Wheeler Willson	Cambridge
Edwin Bidwell Wilson	Brookline
Frederick Shenstone Woods	Newton
Paul Sebastian Yendell	Dorchester

CLASS I., SECTION II.—*Physics*.—53.

Joseph Sweetman Ames	Baltimore, Md.
Carl Barus	Providence, R. I.
Louis Agricola Bauer	Washington, D. C.
Alexander Graham Bell	Washington, D. C.
Louis Bell	Boston
Clarence John Blake	Boston
Percy Williams Bridgman	Cambridge
Henry Andrews Bumstead	New Haven, Conn.
George Ashley Campbell	New York, N. Y.
Daniel Frost Comstock	Boston
William David Coolidge	Schenectady, N. Y.
Henry Crew	Evanston, Ill.
Charles Robert Cross	Brookline
Harvey Nathaniel Davis	Cambridge
Arthur Louis Day	Washington, D. C.
Louis Derr	Brookline
William Johnson Drisko	Boston
William Duane	Boston
Alexander Wilmer Duff	Worcester
Arthur Woolsey Ewell	Worcester

Harry Manley Goodwin	Brookline
George Ellery Hale	Pasadena, Cal.
Edwin Herbert Hall	Cambridge
Hammond Vinton Hayes	Cambridge
William Leslie Hooper	Somerville
John Charles Hubbard	Worcester
Charles Clifford Hutchins	Brunswick, Me.
James Edmund Ives	Worcester
William White Jacques	Boston
Norton Adams Kent	Cambridge
Frank Arthur Laws	Boston
Henry Lefavour	Boston
Theodore Lyman	Brookline
Richard Cockburn Maclaurin	Boston
Thomas Corwin Mendenhall	Ravenna, O.
Ernest George Merritt	Ithaca, N. Y.
Albert Abraham Michelson	Chicago, Ill.
Dayton Clarence Miller	Cleveland, O.
Robert Andrews Millikan	Chicago, Ill.
Harry Wheeler Morse	Los Angeles, Cal.
Edward Leamington Nichols	Ithaca, N. Y.
Ernest Fox Nichols	Hanover, N. H.
Charles Ladd Norton	Boston
George Washington Pierce	Cambridge
Michael Idvorsky Pupin	New York, N. Y.
Wallace Clement Sabine	Boston
John Stone Stone	New York, N. Y.
Maurice deKay Thompson	Boston
Elihu Thomson	Swampscott
John Trowbridge	Cambridge
Arthur Gordon Webster	Worcester
Charles Herbert Williams	Milton
Robert Williams Wood	Baltimore, Md.

CLASS I., SECTION III.—*Chemistry*.—46.

Wilder Dwight Bancroft	Ithaca, N. Y.
Gregory Paul Baxter	Cambridge
Marston Taylor Bogert	New York, N. Y.
Bertram Borden Boltwood	New Haven, Conn.
William Crowell Bray	Berkeley, Cal.

Russel Henry Chittenden	New Haven, Conn.
Arthur Messinger Comey	Chester, Pa.
James Mason Crafts	Boston
Charles William Eliot	Cambridge
Henry Fay	Boston
George Shannon Forbes	Cambridge
Frank Austin Gooch	New Haven, Conn.
Lawrence Joseph Henderson	Cambridge
Eugene Waldemar Hilgard	Berkeley, Cal.
Charles Loring Jackson	Cambridge
Walter Louis Jennings	Worcester
Elmer Peter Kohler	Cambridge
Charles August Kraus	Worcester
Arthur Becket Lamb	Cambridge
Gilbert Newton Lewis	Berkeley, Cal.
Arthur Dehon Little	Brookline
Charles Frederic Mabery	Cleveland, O.
Forris Jewett Moore	Boston
George Dunning Moore	Worcester
Edward Williams Morley	West Hartford, Conn.
Harmon Northrop Morse	Baltimore, Md.
Samuel Parsons Mulliken	Boston
Charles Edward Munroe	Washington, D. C.
John Ulric Nef	Chicago, Ill.
James Flack Norris	Boston
Arthur Amos Noyes	Boston
William Albert Noyes	Urbana, Ill.
Thomas Burr Osborne	New Haven, Conn.
Samuel Cate Prescott	Brookline
Ira Remsen	Baltimore, Md.
Robert Hallowell Richards	Jamaica Plain
Theodore William Richards	Cambridge
Martin André Rosanoff	Worcester
Stephen Paschall Sharples	Cambridge
Miles Standish Sherrill	Brookline
Alexander Smith	New York, N. Y.
Julius Oscar Stieglitz	Chicago, Ill.
Henry Paul Talbot	Newton
William Hultz Walker	Boston
Willis Rodney Whitney	Schenectady, N. Y.
Charles Hallet Wing	Boston

CLASS I., SECTION IV.—*Technology and Engineering*.—44.

Henry Larcom Abbot	Cambridge
Comfort Avery Adams	Cambridge
William Herbert Bixby	Washington, D. C.
Francis Tiffany Bowles	Boston
William Hubert Burr	New York, N. Y.
Alfred Edgar Burton	Boston
John Joseph Carty	New York, N. Y.
Eliot Channing Clarke	Boston
Harry Ellsworth Clifford	Newton
Desmond FitzGerald	Brookline
John Ripley Freeman	Providence, R. I.
George Washington Goethals	Culebra, Canal Zone
John Hays Hammond	New York, N. Y.
Rudolph Hering	New York, N. Y.
Ira Nelson Hollis	Cambridge
Henry Marion Howe	New York, N. Y.
Hector James Hughes	Cambridge
Alexander Crombie Humphreys	New York, N. Y.
Frederick Remsen Hutton	New York, N. Y.
Dugald Caleb Jackson	Boston
Lewis Jerome Johnson	Cambridge
Arthur Edwin Kennelly	Cambridge
Gaetano Lanza	Philadelphia, Pa.
Erasmus Darwin Leavitt	Cambridge
William Roscoe Livermore	Boston
Lionel Simeon Marks	Cambridge
Edward Furber Miller	Boston
Hiram Francis Mills	Lowell
Charles Francis Park	Boston
William Barclay Parsons	New York, N. Y.
Cecil Hobart Peabody	Brookline
Harold Pender	Boston
Edward Dyer Peters	Dorchester
Albert Sauveur	Cambridge
Peter Schwamb	Arlington
Henry Lloyd Smyth	Cambridge
Charles Milton Spofford	Boston
Frederic Pike Stearns	Boston
Charles Proteus Steinmetz	Schenectady, N. Y.

George Fillmore Swain	Cambridge
William Watson	Boston
George Chandler Whipple	Cambridge
Robert Simpson Woodward	Washington, D. C.
Joseph Ruggles Worcester	Boston

CLASS II.—*Natural and Physiological Sciences*.—142.SECTION I.—*Geology, Mineralogy, and Physics of the Globe*.—36.

Cleveland Abbe	Washington, D. C.
Wallace Walter Atwood	Cambridge
Joseph Barrell	New Haven, Conn.
Thomas Chrowder Chamberlin	Chicago, Ill.
John Mason Clarke	Albany, N. Y.
Henry Helm Clayton	Canton
Herdman Fitzgerald Cleland	Williamstown
William Otis Crosby	Jamaica Plain
Reginald Aldworth Daly	Cambridge
Edward Salisbury Dana	New Haven, Conn.
Walter Gould Davis	Cordova, Arg.
William Morris Davis	Cambridge
Benjamin Kendall Emerson	Amherst
Grove Karl Gilbert	Washington, D. C.
Louis Caryl Graton	Cambridge
Oliver Whipple Huntington	Newport, R. I.
Robert Tracy Jackson	Boston
Thomas Augustus Jaggar	Honolulu, H. I.
Douglas Wilson Johnson	New York, N. Y.
Alfred Church Lane	Cambridge
Waldemar Lindgren	Boston
Charles Palache	Cambridge
John Elliott Pillsbury	Washington, D. C.
Raphael Pumpelly	Newport, R. I.
Robert Wilcox Sayles	Cambridge
Charles Schuchert	New Haven, Conn.
William Berryman Scott	Princeton, N. J.
Hervey Woodburn Shimer	Boston
Charles Richard Van Hise	Madison, Wis.
Charles Doolittle Walcott	Washington, D. C.
Robert DeCourcy Ward	Cambridge
Charles Hyde Warren	Auburndale

Herbert Percy Whitlock	Albany, N. Y.
John Eliot Wolff	Cambridge
Jay Backus Woodworth	Cambridge
Frederick Eugene Wright	Washington, D. C.

CLASS II., SECTION II.—*Botany*.—30.

Oakes Ames	North Easton
Irving Widmer Bailey	Cambridge
Liberty Hyde Bailey	Ithaca, N. Y.
Joseph Young Bergen	Cambridge
Douglas Houghton Campbell	Stanford Univ., Cal.
George Perkins Clinton	New Haven, Conn.
Frank Shipley Collins	North Eastham
John Merle Coulter	Chicago, Ill.
Edward Murray East	Jamaica Plain
Alexander William Evans	New Haven, Conn.
William Gilson Farlow	Cambridge
Charles Edward Faxon	Jamaica Plain
Merritt Lyndon Fernald	Cambridge
George Lincoln Goodale	Cambridge
Robert Almer Harper	New York, N. Y.
John George Jack	Jamaica Plain
Edward Charles Jeffrey	Cambridge
Fred Dayton Lambert	Tufts College
Burton Edward Livingston	Baltimore, Md.
George Richard Lyman	Washington, D. C.
Winthrop John Vanleuven Osterhout	Cambridge
Alfred Rehder	Jamaica Plain
Lincoln Ware Riddle	Wellesley
Benjamin Lincoln Robinson	Cambridge
Charles Sprague Sargent	Brookline
Arthur Bliss Seymour	Cambridge
Erwin Frink Smith	Washington, D. C.
John Donnell Smith	Baltimore, Md.
Roland Thaxter	Cambridge
William Trelease	Urbana, Ill.

CLASS II., SECTION III.—*Zoölogy and Physiology*.—45.

Glover Morrill Allen	Boston
Joel Asaph Allen	New York, N. Y.
Francis Gano Benedict	Boston

Henry Bryant Bigelow	Concord
Robert Payne Bigelow	Brookline
William Brewster	Cambridge
Charles Thomas Brues	Boston
Hermon Carey Bumpus	Tufts College
Walter Bradford Cannon	Cambridge
William Ernest Castle	Belmont
Charles Value Chapin	Providence, R. I.
Samuel Fessenden Clarke	Williamstown
Edwin Grant Conklin	Princeton, N. J.
William Thomas Councilman	Boston
William Healey Dall	Washington, D. C.
Charles Benedict Davenport	Cold Spring Harbor, N. Y.
Gilman Arthur Drew	Woods Hole
Otto Knut Olof Folin	Brookline
Alexander Forbes	Milton
Samuel Henshaw	Cambridge
Leland Ossian Howard	Washington, D. C.
Herbert Spencer Jennings	Baltimore, Md.
Charles Atwood Kofoid	Berkeley, Cal.
Ralph Stayner Lillie	Worcester
Jacques Loeb	New York, N. Y.
Franklin Paine Mall	Baltimore, Md.
Edward Laurens Mark	Cambridge
Albert Davis Mead	Providence, R. I.
Edward Sylvester Morse	Salem
Herbert Vincent Neal	Tufts College
Henry Fairfield Osborn	New York, N. Y.
George Howard Parker	Cambridge
John Charles Phillips	Wenham
James Jackson Putnam	Boston
Herbert Wilbur Rand	Cambridge
William Emerson Ritter	La Jolla, Cal.
William Thompson Sedgwick	Boston
John Eliot Thayer	Lancaster
Addison Emory Verrill	New Haven, Conn.
Arthur Wisswold Weyse	Boston
William Morton Wheeler	Boston
James Clarke White	Boston
Harris Hawthorne Wilder	Northampton
Edmund Beecher Wilson	New York, N. Y.
Robert Mearns Yerkes	Cambridge

CLASS II., SECTION IV.—*Medicine and Surgery*.—31.

Edward Hickling Bradford	Boston
Henry Asbury Christian	Boston
Harvey Cushing	Boston
David Linn Edsall	Boston
Harold Clarence Ernst	Jamaica Plain
Simon Flexner	New York, N. Y.
William Stewart Halsted	Baltimore, Md.
Reid Hunt	Brookline
Abraham Jacobi	New York, N. Y.
Elliott Proctor Joslin	Boston
William Williams Keen	Philadelphia, Pa.
Frank Burr Mallory	Brookline
Samuel Jason Mixter	Boston
Edward Hall Nichols	Boston
Sir William Osler	Oxford, Eng.
Theophil Mitchell Prudden	New York, N. Y.
William Lambert Richardson	Boston
Milton Joseph Rosenau	Boston
Frederick Cheever Shattuck	Boston
Theobald Smith	Jamaica Plain
Elmer Ernest Southard	Boston
Richard Pearson Strong	Boston
Ernest Edward Tyzzer	Boston
Frederick Herman Verhoeff	Boston
Henry Pickering Walcott	Cambridge
John Collins Warren	Boston
William Henry Welch	Baltimore, Md.
Francis Henry Williams	Boston
Simeon Burt Wolbach	Boston
Horatio Curtis Wood	Philadelphia, Pa.
James Homer Wright	Boston

CLASS III.—*Moral and Political Sciences*.—146.SECTION I.—*Theology, Philosophy and Jurisprudence*.—41.

Simeon Eben Baldwin	New Haven, Conn.
Joseph Henry Beale	Cambridge
Melville Madison Bigelow	Cambridge
Joseph Hedges Choate	New York, N. Y.

James De Normandie	Roxbury
Frederic Dodge	Belmont
Edward Staples Drown	Cambridge
William Harrison Dunbar	Boston
Timothy Dwight	New Haven, Conn.
William Wallace Fenn	Cambridge
Frederick Perry Fish	Brookline
George Angier Gordon	Boston
John Wilkes Hammond	Cambridge
Alfred Hemenway	Boston
William DeWitt Hyde	Brunswick, Me.
Marcus Perrin Knowlton	Springfield
William Lawrence	Boston
George Vasmer Leverett	Boston
William Caleb Loring	Boston
Nathan Matthews	Boston
Edward Caldwell Moore	Cambridge
Hugo Münsterberg	Cambridge
George Herbert Palmer	Cambridge
George Wharton Pepper	Philadelphia, Pa.
John Winthrop Platner	Cambridge
Roscoe Pound	Belmont
Elihu Root	New York, N. Y.
James Hardy Ropes	Cambridge
Josiah Royce	Cambridge
Arthur Prentice Rugg	Worcester
Henry Newton Sheldon	Boston
Moorfield Storey	Boston
William Howard Taft	New Haven, Conn.
Ezra Ripley Thayer	Boston
William Jewett Tucker	Hanover, N. H.
William Cushing Wait	Medford
Williston Walker	New Haven, Conn.
Eugene Wambaugh	Cambridge
Edward Henry Warren	Boston
Samuel Williston	Belmont
Woodrow Wilson	Washington, D. C.

CLASS III., SECTION II.—*Philology and Archaeology*.—45.

Francis Greenleaf Allinson	Providence, R. I.
William Rosenzweig Arnold	Cambridge
Maurice Bloomfield	Baltimore, Md.

Franz Boas	New York, N. Y.
Charles Pickering Bowditch	Jamaica Plain
Franklin Carter	Williamstown
George Henry Chase	Cambridge
Roland Burrage Dixon	Cambridge
William Curtis Farabee	Cambridge
Jesse Walter Fewkes	Washington, D. C.
Jeremiah Denis Mathias Ford	Cambridge
Basil Lanneau Gildersleeve	Baltimore, Md.
Charles Hall Grandgent	Cambridge
Charles Burton Gulick	Cambridge
William Arthur Heidel	Middletown, Conn.
Bert Hodge Hill	Athens, Greece
Edward Washburn Hopkins	New Haven, Conn.
Albert Andrew Howard	Cambridge
Aleš Hrdlicka	Washington, D. C.
Carl Newell Jackson	Cambridge
Hans Carl Gunther von Jagemann	Cambridge
James Richard Jewett	Cambridge
Alfred Louis Kroeber	Berkeley, Cal.
Kirsopp Lake	Cambridge
Henry Roseman Lang	New Haven, Conn.
Charles Rockwell Lanman	Cambridge
David Gordon Lyon	Cambridge
Clifford Herschel Moore	Cambridge
George Foot Moore	Cambridge
Hanns Oertel	New Haven, Conn.
Charles Pomeroy Parker	Cambridge
Bernadotte Perrin	New Haven, Conn.
Frederick Ward Putnam	Cambridge
Edward Kennard Rand	Cambridge
George Andrew Reisner	Cambridge
Edward Robinson	New York, N. Y.
Fred Norris Robinson	Cambridge
Edward Stevens Sheldon	Cambridge
Herbert Weir Smyth	Cambridge
Franklin Bache Stephenson	Claremont, Cal.
Charles Cutler Torrey	New Haven, Conn.
Alfred Marston Tozzer	Cambridge
Andrew Dickson White	Ithaca, N. Y.
John Williams White	Cambridge
James Haughton Woods	Cambridge

CLASS III., SECTION III.—*Political Economy and History*.—29.

Henry Adams	Washington, D. C.
Charles Jesse Bullock	Cambridge
Thomas Nixon Carver	Cambridge
Archibald Cary Coolidge	Boston
Richard Henry Dana	Cambridge
Andrew McFarland Davis	Cambridge
Davis Rich Dewey	Cambridge
Edward Bangs Drew	Cambridge
Ephraim Emerton	Cambridge
Henry Walcott Farnam	New Haven, Conn.
Irving Fisher	New Haven, Conn.
Worthington Chauncey Ford	Boston
Edwin Francis Gay	Cambridge
Arthur Twining Hadley	New Haven, Conn.
Charles Homer Haskins	Cambridge
Henry Cabot Lodge	Nahant
Abbott Lawrence Lowell	Cambridge
Roger Bigelow Merriman	Cambridge
William Bennett Munro	Cambridge
James Ford Rhodes	Boston
William Mulligan Sloane	New York, N. Y.
Charles Card Smith	Boston
Henry Morse Stephens	Berkeley, Cal.
Frank William Taussig	Cambridge
William Roscoe Thayer	Cambridge
Frederick Jackson Turner	Cambridge
Thomas Franklin Waters	Ipswich
George Grafton Wilson	Cambridge
George Parker Winship	Providence, R. I.

CLASS III., SECTION IV.—*Literature and the Fine Arts*.—31.

James Burrell Angell	Ann Arbor, Mich.
George Pierce Baker	Cambridge
Arlo Bates	Boston
William Sturgis Bigelow	Boston
Le Baron Russell Briggs	Cambridge
George Whitefield Chadwick	Boston

Samuel McChord Crothers	Cambridge
Wilberforce Eames	New York, N. Y.
Henry Herbert Edes	Cambridge
Arthur Fairbanks	Cambridge
Arthur Foote	Brookline
Kuno Francke	Cambridge
Daniel Chester French	Stockbridge
Robert Grant	Boston
Henry Lee Higginson	Boston
James Kendall Hosmer	Minneapolis, Minn.
Mark Antony DeWolfe Howe	Boston
George Lyman Kittredge	Cambridge
William Coolidge Lane	Cambridge
Albert Matthews	Boston
Samuel Eliot Morison	Boston
William Allan Neilson	Cambridge
Bela Lyon Pratt	Boston
Herbert Putnam	Washington, D. C.
Denman Waldo Ross	Cambridge
John Singer Sargent	London, Eng.
Ellery Sedgwick	Boston
Herbert Langford Warren	Cambridge
Barrett Wendell	Boston
Owen Wister	Philadelphia, Pa.
George Edward Woodberry	Beverly

FOREIGN HONORARY MEMBERS.—68.

(Number limited to seventy-five).

CLASS I.—*Mathematical and Physical Sciences*.—23.SECTION I.—*Mathematics and Astronomy*.—6.

Arthur Auwers	Berlin
Johann Oskar Backlund	Petrograd
Felix Klein	Göttingen
Sir Joseph Norman Lockyer	London
Émile Picard	Paris
Charles Jean de la Vallée Poussin	Louvain

CLASS I., SECTION II.—*Physics*.—9.

Svante August Arrhenius	Stockholm
Oliver Heaviside	Torquay
Sir Joseph Larmor	Cambridge
Hendrik Antoon Lorentz	Leyden
Max Planck	Berlin
Augusto Righi	Bologna
John William Strutt, Baron Rayleigh	Witham
Sir Ernest Rutherford	Manchester
Sir Joseph John Thomson	Cambridge

CLASS I., SECTION III.—*Chemistry*.—5.

Adolf, Ritter von Baeyer	Munich
Emil Fischer	Berlin
Fritz Haber	Berlin
Wilhelm Ostwald	Leipsic
Sir Henry Enfield Roscoe	London

CLASS I., SECTION IV.—*Technology and Engineering*.—3.

Heinrich Müller-Breslau	Berlin
Vsevolod Jevgenjevic Timonoff	Petrograd
William Cawthorne Unwin	London

CLASS II.—*Natural and Physiological Sciences*.—21.SECTION I.—*Geology, Mineralogy, and Physics of the Globe*.—6.

Waldemar Christofer Brögger	Christiania
Sir Archibald Geikie	Haslemere, Surrey
Viktor Goldschmidt	Heidelberg
Julius Hann	Vienna
Albert Heim	Zürich
Johan Herman Lie Vogt	Trondhjem

CLASS II., SECTION II.—*Botany*.—6.

John Briquet	Geneva
Adolf Engler	Berlin
Wilhelm Pfeffer	Leipsic
Hermann, Graf zu Solms-Laubach	Strassburg
Ignatz Urban	Berlin
Eugene Warming	Copenhagen

CLASS II., SECTION III.—*Zoölogy and Physiology*.—4.

Ludimar Hermann	Königsberg
Sir Edwin Ray Lankester	London
Elie Metchnikoff	Paris
Magnus Gustav Retzius	Stockholm

CLASS II., SECTION IV.—*Medicine and Surgery*.—5.

Emil von Behring	Marburg
Sir Thomas Lauder Brunton, Bart	London
Angelo Celli	Rome
Sir Victor Alexander Haden Horsley	London
Adam Politzer	Vienna

CLASS III.—*Moral and Political Sciences*.—24.SECTION I.—*Theology, Philosophy and Jurisprudence*.—4.

Arthur James Balfour	Prestonkirk
Heinrich Brunner	Berlin
Albert Venn Dicey	Oxford
Sir Frederick Pollock, Bart	London

SECTION II.—*Philology and Archaeology*.—10.

Ingram Bywater	London
Friedrich Delitzsch	Berlin
Hermann Diels	Berlin
Wilhelm Dörpfeld	Athens
Henry Jackson	Cambridge
Hermann Georg Jacobi	Bonn
Sir Gaston Camille Charles Maspero	Paris
Alfred Percival Maudslay	Hereford
Arthur Sampson Napier	Oxford
Eduard Seler	Berlin

SECTION III.—*Political Economy and History*.—5.

Viscount Bryce	London
Adolf Harnack	Berlin
John Morley, Viscount Morley of Blackburn	London
Sir George Otto Trevelyan, Bart	London
Pasquale Villari	Florence

SECTION IV.—*Literature and the Fine Arts*.—5.

Georg Brandes	Copenhagen
Jean Adrien Aubin Jules Jusserand	Paris
Rudyard Kipling	Burwash
Sir Sidney Lee	London
Sir James Augustus Henry Murray	Oxford

STATUTES AND STANDING VOTES

STATUTES

*Adopted November 8, 1911: amended May 8, 1912, January 8, and
May 14, 1913, April 14, 1915.*

CHAPTER I

THE CORPORATE SEAL

ARTICLE 1. The Corporate Seal of the Academy shall be as here depicted:



ARTICLE 2. The Recording Secretary shall have the custody of the Corporate Seal.

See Chap. v. art. 3; chap. vi. art. 2.

CHAPTER II

FELLOWS AND FOREIGN HONORARY MEMBERS AND DUES

ARTICLE 1. The Academy consists of Fellows, who are either citizens or residents of the United States of America, and Foreign Honorary Members. They are arranged in three Classes, according to the Arts and Sciences in which they are severally proficient, and each Class is divided into four Sections, namely:

CLASS I. *The Mathematical and Physical Sciences*

- Section 1. Mathematics and Astronomy
- Section 2. Physics
- Section 3. Chemistry
- Section 4. Technology and Engineering

CLASS II. *The Natural and Physiological Sciences*

- Section 1. Geology, Mineralogy, and Physics of the Globe
- Section 2. Botany
- Section 3. Zoölogy and Physiology
- Section 4. Medicine and Surgery

CLASS III. *The Moral and Political Sciences*

- Section 1. Theology, Philosophy, and Jurisprudence
- Section 2. Philology and Archaeology
- Section 3. Political Economy and History
- Section 4. Literature and the Fine Arts

ARTICLE 2. The number of Fellows shall not exceed Six hundred, of whom not more than Four hundred shall be residents of Massachusetts, nor shall there be more than Two hundred in any one Class.

ARTICLE 3. The number of Foreign Honorary Members shall not exceed Seventy-five. They shall be chosen from among citizens of foreign countries most eminent for their discoveries and attainments in any of the Classes above enumerated. There shall not be more than Twenty-five in any one Class.

ARTICLE 4. If any person, after being notified of his election as Fellow, shall neglect for six months to accept in writing and to pay his Admission Fee (unless he be absent from the Commonwealth at the time of his notification) his election shall be void; and if any Fellow resident within fifty miles of Boston shall neglect to pay his Annual Dues for six months after they are due, provided his attention shall have been called to this Article of the Statutes in the meantime,

he shall cease to be a Fellow; but the Council may suspend the provisions of this Article for a reasonable time.

With the previous consent of the Council, the Treasurer may dispense (*sub silentio*) with the payment of the Admission Fee or of the Annual Dues or both whenever he shall deem it advisable. In the case of officers of the Army or Navy who are out of the Commonwealth on duty, payment of the Annual Dues may be waived during such absence if continued during the whole financial year and if notification of such expected absence be sent to the Treasurer. Upon similar notification to the Treasurer, similar exemption may be accorded to Fellows subject to Annual Dues, who may temporarily remove their residence for at least two years to a place more than fifty miles from Boston.

If any person elected a Foreign Honorary Member shall neglect for six months after being notified of his election to accept in writing, his election shall be void.

See Chap. vii. art. 2.

ARTICLE 5. Every Fellow hereafter elected shall pay an Admission Fee of Ten dollars.

Every Fellow resident within fifty miles of Boston shall, and others may, pay such Annual Dues, not exceeding Fifteen dollars, as shall be voted by the Academy at each Annual Meeting, when they shall become due, except in the case of Fellows elected at the January meetings, who shall be obliged to pay but one half of such Annual Dues in the year in which they are elected; but any Fellow shall be exempt from the annual payment if, at any time after his admission, he shall pay into the treasury Two hundred dollars in addition to his previous payments.

All Commutations of the Annual Dues shall be and remain permanently funded, the interest only to be used for current expenses.

Any Fellow not previously subject to Annual Dues who takes up his residence within fifty miles of Boston, shall pay to the Treasurer within three months thereafter Annual Dues for the current year, failing which his Fellowship shall cease; but the Council may suspend the provisions of this Article for a reasonable time.

Only Fellows who pay Annual Dues or have commuted them may hold office in the Academy or serve on the Standing Committees or vote at meetings.

ARTICLE 6. Fellows who pay or have commuted the Annual Dues and Foreign Honorary Members shall be entitled to receive gratis one copy of all Publications of the Academy issued after their election.

See Chap. x. art. 2.

ARTICLE 7. Diplomas signed by the President and the Vice-President of the Class to which the member belongs, and countersigned by the Secretaries, shall be given to all the Fellows and Foreign Honorary Members.

ARTICLE 8. If, in the opinion of a majority of the entire Council, any Fellow or Foreign Honorary Member shall have rendered himself unworthy of a place in the Academy, the Council shall recommend to the Academy the termination of his membership; and if three fourths of the Fellows present, out of a total attendance of not less than fifty, at a Stated Meeting, or at a Special Meeting called for the purpose, shall adopt this recommendation, his name shall be stricken from the Roll.

See Chap. iii.; chap. vi. art. 1; chap. ix. art. 1, 7; chap. x. art. 2.

CHAPTER III

ELECTION OF FELLOWS AND FOREIGN HONORARY MEMBERS

ARTICLE 1. Elections of Fellows and Foreign Honorary Members shall be by ballot, and only at the Stated Meetings in January and May. Three fourths of the ballots cast, and not less than twenty, must be affirmative to effect an election.

ARTICLE 2. Candidates must be proposed in writing by two Fellows of the Section for which the proposal is made. These signed nominations shall be sent to the Corresponding Secretary and shall be retained by him until the fifteenth of the following October or February, as the case may be, when all nominations then in his hands shall be immediately sent in printed form to every Fellow having the right to vote, with the names of the proposers in each case, and with a request to send to the Corresponding Secretary written comments on these names not later than the fifth of November or the fifth of March respectively.

All the signed nominations, with the comments thereon, received up to the fifth of November or the fifth of March shall be sent at once to the appropriate Class Committees, which shall report their decisions to the Council at a special meeting to be called to consider nominations, not later than two days before the meeting of the Academy in December and April respectively.

Notice shall be sent to every Fellow having the right to vote, not later than the thirtieth of September or the thirty-first of January, of each year, calling attention to the fact that the limit of time for

sending nominations to the Corresponding Secretary will expire on the fifteenth of the following month.

ARTICLE 3. All nominations approved by the Council shall be read to the Academy at a meeting in December or in April, or be sent to the Fellows in print with the official notice of the meeting, and shall then be posted in the Hall of the Academy until the balloting.

Not later than two weeks after any nomination is reported to the Academy, the Corresponding Secretary shall send to every Fellow having the right to vote a brief printed account of the nominee.

See Chap. ii.; chap. vi. art. 1; chap. ix. art. 1.

CHAPTER IV

OFFICERS

ARTICLE 1. The Officers of the Academy shall be a President (who shall be Chairman of the Council), three Vice-Presidents (one from each Class), a Corresponding Secretary (who shall be Secretary of the Council), a Recording Secretary, a Treasurer, and a Librarian, all of whom shall be elected by ballot at the Annual Meeting, and shall hold their respective offices for one year, and until others are duly chosen and installed.

There shall be also twelve Councillors, one from each Section of each Class. At each Annual Meeting three Councillors, one from each Class, shall be elected by ballot to serve for the full term of four years and until others are duly chosen and installed. The same Fellow shall not be eligible for two successive terms.

The Councillors, with the other officers previously named, and the Chairman of the House Committee, *ex officio*, shall constitute the Council.

See Chap. x. art. 1.

ARTICLE 2. If any office shall become vacant during the year, the vacancy may be filled by the Council in its discretion for the unexpired term.

ARTICLE 3. At the Stated Meeting in March, the President shall appoint a Nominating Committee of three Fellows having the right to vote, one from each Class. This Committee shall prepare a list of nominees for the several offices to be filled, and for the Standing Committees, and cause it to be sent to the Recording Secretary not later than four weeks before the Annual Meeting.

ARTICLE 4. Independent nominations for any office, if signed by at least twenty Fellows having the right to vote, and received by the Recording Secretary not less than ten days before the Annual Meeting, shall be inserted, together with the list of nominees prepared by the Nominating Committee, in the call therefor, and shall be mailed to all the Fellows.

See Chap. vi. art. 2.

ARTICLE 5. The Recording Secretary shall prepare for use in voting at the Annual Meeting a ballot containing the names of all persons duly nominated for office.

CHAPTER V

THE PRESIDENT

ARTICLE 1. The President, or in his absence the senior Vice-President present (seniority to be determined by length of continuous fellowship in the Academy), shall preside at all meetings of the Academy. In the absence of all these officers, a Chairman of the meeting shall be chosen by ballot.

ARTICLE 2. Unless otherwise ordered, all Committees which are not elected by ballot shall be appointed by the presiding officer.

ARTICLE 3. Any deed or writing to which the Corporate Seal is to be affixed, except leases of real estate, shall be executed in the name of the Academy by the President or, in the event of his death, absence, or inability, by one of the Vice-Presidents, when thereto duly authorized.

See Chap. ii. art. 7; chap. iv. art. 1, 3; chap. vi. art. 2; chap. vii. art. 1; chap. ix. art. 6; chap. x. art. 1; 2; chap. xi. art. 1.

CHAPTER VI

THE SECRETARIES

ARTICLE 1. The Corresponding Secretary shall conduct the correspondence of the Academy and of the Council, recording or making an entry of all letters written in its name, and preserving for the files all official papers which may be received. At each meeting of the Council he shall present the communications addressed to the Academy which

have been received since the previous meeting, and at the next meeting of the Academy he shall present such as the Council may determine.

He shall notify all persons who may be elected Fellows or Foreign Honorary Members, send to each a copy of the Statutes, and on their acceptance issue the proper Diploma. He shall also notify all meetings of the Council; and in case of the death, absence, or inability of the Recording Secretary he shall notify all meetings of the Academy.

Under the direction of the Council, he shall keep a List of the Fellows and Foreign Honorary Members, arranged in their several Classes and Sections. It shall be printed annually and issued as of the first day of July.

See Chap. ii. art. 7; chap. iii. art. 2, 3; chap. iv. art. 1; chap. ix. art. 6; chap. x. art. 1; chap. xi. art. 1.

ARTICLE 2. The Recording Secretary shall have the custody of the Charter, Corporate Seal, Archives, Statute-Book, Journals, and all literary papers belonging to the Academy.

Fellows borrowing such papers or documents shall receipt for them to their custodian.

The Recording Secretary shall attend the meetings of the Academy and keep a faithful record of the proceedings with the names of the Fellows present; and after each meeting is duly opened, he shall read the record of the preceding meeting.

He shall notify the meetings of the Academy to each Fellow by mail at least seven days beforehand, and in his discretion may also cause the meetings to be advertised; he shall apprise Officers and Committees of their election or appointment, and inform the Treasurer of appropriations of money voted by the Academy.

He shall post in the Hall a list of the persons nominated for election into the Academy; and after all elections, he shall insert in the Records the names of the Fellows by whom the successful candidates were nominated.

In the absence of the President and of the Vice-Presidents he shall, if present, call the meeting to order, and preside until a Chairman is chosen.

See Chap. i.; chap. ii. art. 7; chap. iv. art. 3, 4, 5; chap. ix. art. 6; chap. x. art. 1, 2; chap. xi. art. 1, 3.

ARTICLE 3. The Secretaries, with the Chairman of the Committee of Publication, shall have authority to publish such of the records of the meetings of the Academy as may seem to them likely to promote its interests.

CHAPTER VII

THE TREASURER AND THE TREASURY

ARTICLE 1. The Treasurer shall collect all money due or payable to the Academy, and all gifts and bequests made to it. He shall pay all bills due by the Academy, when approved by the proper officers, except those of the Treasurer's office, which may be paid without such approval; in the name of the Academy he shall sign all leases of real estate; and, with the written consent of a member of the Committee on Finance, he shall make all transfers of stocks, bonds, and other securities belonging to the Academy, all of which shall be in his official custody.

He shall keep a faithful account of all receipts and expenditures, submit his accounts annually to the Auditing Committee, and render them at the expiration of his term of office, or whenever required to do so by the Academy or the Council.

He shall keep separate accounts of the income of the Rumford Fund, and of all other special Funds, and of the appropriation thereof, and render them annually.

His accounts shall always be open to the inspection of the Council.

ARTICLE 2. He shall report annually to the Council at its March meeting on the expected income of the various Funds and from all other sources during the ensuing financial year. He shall also report the names of all Fellows who may be then delinquent in the payment of their Annual Dues.

ARTICLE 3. He shall give such security for the trust reposed in him as the Academy may require.

ARTICLE 4. With the approval of a majority of the Committee on Finance, he may appoint an Assistant Treasurer to perform his duties, for whose acts, as such assistant, he shall be responsible; or, with like approval and responsibility, he may employ any Trust Company doing business in Boston as his agent for the same purpose, the compensation of such Assistant Treasurer or agent to be fixed by the Committee on Finance and paid from the funds of the Academy.

ARTICLE 5. At the Annual Meeting he shall report in print all his official doings for the preceding year, stating the amount and condition

of all the property of the Academy entrusted to him, and the character of the investments.

ARTICLE 6. The Financial Year of the Academy shall begin with the first day of April.

ARTICLE 7. No person or committee shall incur any debt or liability in the name of the Academy, unless in accordance with a previous vote and appropriation therefor by the Academy or the Council, or sell or otherwise dispose of any property of the Academy, except cash or invested funds, without the previous consent and approval of the Council.

See Chap. ii. art. 4, 5; chap. vi. art. 2; chap ix. art. 6; chap. x. art. 1, 2, 3; chap. xi. art.

CHAPTER VIII

THE LIBRARIAN AND THE LIBRARY

ARTICLE 1. The Librarian shall have charge of the printed books, keep a correct catalogue thereof, and provide for their delivery from the Library.

At the Annual Meeting, as Chairman of the Committee on the Library, he shall make a Report on its condition.

ARTICLE 2. In conjunction with the Committee on the Library he shall have authority to expend such sums as may be appropriated by the Academy for the purchase of books, periodicals, etc., and for defraying other necessary expenses connected with the Library.

ARTICLE 3. All books procured from the income of the Rumford Fund or of other special Funds shall contain a book-plate expressing the fact.

ARTICLE 4. Books taken from the Library shall be received for to the Librarian or his assistant.

ARTICLE 5. Books shall be returned in good order, regard being had to necessary wear with good usage. If any book shall be lost or injured, the Fellow to whom it stands charged shall replace it by a new volume or by a new set, if it belongs to a set, or pay the current price thereof to the Librarian, whereupon the remainder of the set, if any,

shall be delivered to the Fellow so paying, unless such remainder be valuable by reason of association.

ARTICLE 6. All books shall be returned to the Library for examination at least one week before the Annual Meeting.

ARTICLE 7. The Librarian shall have the custody of the Publications of the Academy. With the advice and consent of the President, he may effect exchanges with other associations.

See Chap. ii. art. 6; chap. x. art. 1, 2.

CHAPTER IX

THE COUNCIL

ARTICLE 1. The Council shall exercise a discreet supervision over all nominations and elections to membership, and in general supervise all the affairs of the Academy not explicitly reserved to the Academy as a whole or entrusted by it or by the Statutes to standing or special committees.

It shall consider all nominations duly sent to it by any Class Committee, and present to the Academy for action such of these nominations as it may approve by a majority vote of the members present at a meeting, of whom not less than seven shall have voted in the affirmative.

With the consent of the Fellow interested, it shall have power to make transfers between the several Sections of the same Class, reporting its action to the Academy.

See Chap. iii. art. 2, 3; chap. x. art. 1.

ARTICLE 2. Seven members shall constitute a quorum.

ARTICLE 3. It shall establish rules and regulations for the transaction of its business, and provide all printed and engraved blanks and books of record.

ARTICLE 4. It shall act upon all resignations of officers, and all resignations and forfeitures of fellowship; and cause the Statutes to be faithfully executed.

It shall appoint all agents and subordinates not otherwise provided for by the Statutes, prescribe their duties, and fix their compensation.

They shall hold their respective positions during the pleasure of the Council.

ARTICLE 5. It may appoint, for terms not exceeding one year, and prescribe the functions of, such committees of its number, or of the Fellows of the Academy, as it may deem expedient, to facilitate the administration of the affairs of the Academy or to promote its interests.

ARTICLE 6. At its March meeting it shall receive reports from the President, the Secretaries, the Treasurer, and the Standing Committees, on the appropriations severally needed for the ensuing financial year. At the same meeting the Treasurer shall report on the expected income of the various Funds and from all other sources during the same year.

A report from the Council shall be submitted to the Academy, for action, at the March meeting, recommending the appropriation which in the opinion of the Council should be made.

On the recommendation of the Council, special appropriations may be made at any Stated Meeting of the Academy, or at a Special Meeting called for the purpose.

See Chap. x. art. 3.

ARTICLE 7. After the death of a Fellow or Foreign Honorary Member, it shall appoint a member of the Academy to prepare a Memoir for publication in the Proceedings.

ARTICLE 8. It shall report at every meeting of the Academy such business as it may deem advisable to present.

See Chap. ii. art. 4, 5, 8; chap. iv. art. 1, 2; chap. vi. art. 1; chap. vii. art. 1; chap. xi. art. 1, 4.

CHAPTER X

STANDING COMMITTEES

ARTICLE 1. The Class Committee of each Class shall consist of the Vice-President, who shall be chairman, and the four Councillors of the Class, together with such other officer or officers annually elected as may belong to the Class. It shall consider nominations to Fellowship in its own Class, and report in writing to the Council such as may receive at a Class Committee Meeting a majority of the votes cast, provided at least three shall have been in the affirmative.

See Chap. iii. art. 2.

ARTICLE 2. At the Annual Meeting the following Standing Committees shall be elected by ballot to serve for the ensuing year:

(i) *The Committee on Finance*, to consist of three Fellows, who, through the Treasurer, shall have full control and management of the funds and trusts of the Academy, with the power of investing the funds and of changing the investments thereof in their discretion.

See Chap. iv. art. 3; chap. vii. art. 1, 4; chap. ix. art. 6.

(ii) *The Rumford Committee*, to consist of seven Fellows, who shall report to the Academy on all applications and claims for the Rumford Premium. It alone shall authorize the purchase of books publications and apparatus at the charge of the income from the Rumford Fund, and generally shall see to the proper execution of the trust.

See Chap. iv. art. 3; chap. ix. art. 6.

(iii) *The Cyrus Moors Warren Committee*, to consist of seven Fellows, who shall consider all applications for appropriations from the income of the Cyrus Moors Warren Fund, and generally shall see to the proper execution of the trust.

See Chap. iv. art. 3; chap. ix. art. 6.

(iv) *The Committee of Publications*, to consist of three Fellows, one from each Class, to whom all communications submitted to the Academy for publication shall be referred, and to whom the printing of the Proceedings and the Memoirs shall be entrusted.

It shall fix the price at which the Publications shall be sold; but Fellows may be supplied at half price with volumes which may be needed to complete their sets, but which they are not entitled to receive gratis.

Two hundred extra copies of each paper accepted for publication in the Proceedings or the Memoirs shall be placed at the disposal of the author without charge.

See Chap. iv. art. 3; chap. vi. art. 1, 3; chap. ix. art. 6.

(v) *The Committee on the Library*, to consist of the Librarian, *ex officio*, as Chairman, and three other Fellows, one from each Class, who shall examine the Library and make an annual report on its condition and management.

See Chap. iv. art. 3; chap. viii. art. 1, 2; chap. ix. art. 6.

(vi) *The House Committee*, to consist of three Fellows, who shall have charge of all expenses connected with the House, including the general expenses of the Academy not specifically assigned to the care of other Committees or Officers.

See Chap. iv. art. 1, 3; chap. ix. art. 6.

(vii) *The Committee on Meetings*, to consist of the President, the Recording Secretary, and three other Fellows, who shall have charge of plans for meetings of the Academy.

See Chap. iv. art. 3; chap. ix. art. 6.

(viii) *The Auditing Committee*, to consist of two Fellows, who shall audit the accounts of the Treasurer, with power to employ an expert and to approve his bill.

See Chap. iv. art. 3; chap. vii. art. 1; chap. ix. art. 6.

ARTICLE 3. The Standing Committees shall report annually to the Council in March on the appropriations severally needed for the ensuing financial year; and all bills incurred on account of these Committees, within the limits of the several appropriations made by the Academy, shall be approved by their respective Chairmen.

In the absence of the Chairman of any Committee, bills may be approved by any member of the Committee whom he shall designate for the purpose.

See Chap. vii. art. 1, 7; chap. ix. art. 6.

CHAPTER XI

MEETINGS, COMMUNICATIONS, AND AMENDMENTS

ARTICLE 1. There shall be annually eight Stated Meetings of the Academy, namely, on the second Wednesday of October, November, December, January, February, March, April and May. Only at these meetings, or at adjournments thereof regularly notified, or at Special Meetings called for the purpose, shall appropriations of money be made, or amendments of the Statutes or Standing Votes be effected.

The Stated Meeting in May shall be the Annual Meeting of the Corporation.

Special Meetings shall be called by either of the Secretaries at the request of the President, of a Vice-President, of the Council, or of ten

Fellows having the right to vote; and notifications thereof shall state the purpose for which the meeting is called.

A meeting for receiving and discussing literary or scientific communications may be held on the fourth Wednesday of each month, excepting July, August, and September; but no business shall be transacted at said meetings.

ARTICLE 2. Twenty Fellows having the right to vote shall constitute a quorum for the transaction of business at Stated or Special Meetings. Fifteen Fellows shall be sufficient to constitute a meeting for literary or scientific communications and discussions.

ARTICLE 3. Upon the request of the presiding officer or the Recording Secretary, any motion or resolution offered at any meeting shall be submitted in writing.

ARTICLE 4. No report of any paper presented at a meeting of the Academy shall be published by any Fellow without the consent of the author; and no report shall in any case be published by any Fellow in a newspaper as an account of the proceedings of the Academy without the previous consent and approval of the Council. The Council, in its discretion, by a duly recorded vote, may delegate its authority in this regard to one or more of its members.

ARTICLE 5. No Fellow shall introduce a guest at any meeting of the Academy until after the business has been transacted, and especially until after nominations to Fellowship have been read and the result of the balloting for candidates has been declared.

ARTICLE 6. The Academy shall not express its judgment on literary or scientific memoirs or performances submitted to it, or included in its Publications.

ARTICLE 7. All proposed Amendments of the Statutes shall be referred to a committee, and on its report, at a subsequent Stated Meeting or at a Special Meeting called for the purpose, two thirds of the ballot cast, and not less than twenty, must be affirmative to effect enactment.

ARTICLE 8. Standing Votes may be passed, amended, or rescinded at a Stated Meeting, or at a Special Meeting called for the purpose, by a vote of two thirds of the members present. They may be suspended by a unanimous vote.

See Chap. ii. art. 5, 8; chap. iii.; chap. iv. art. 3, 4, 5; chap. v. art. 1; chap. vi. art. 1, 2; chap. ix. art. 8.

STANDING VOTES

1. Communications of which notice has been given to either of the Secretaries shall take precedence of those not so notified.
2. Fellows may take from the Library six volumes at any one time, and may retain them for three months, and no longer. Upon special application, and for adequate reasons assigned, the Librarian may permit a larger number of volumes, not exceeding twelve, to be drawn from the Library for a limited period.
3. Works published in numbers, when unbound, shall not be taken from the Hall of the Academy without the leave of the Librarian.
4. There may be chosen by the Academy, under the same rules by which Fellows are now chosen, one hundred Resident Associates. Not more than forty Resident Associates shall be chosen in any one Class.

The election of Resident Associates shall be for a term of three years with eligibility for reëlection.

Resident Associates shall be entitled to the same privileges as Fellows, in the use of the Academy building, may attend meetings and present papers, but they shall not have the right to vote. They shall pay no Admission Fee, and their Annual Dues shall be one-half that of Fellows residing within fifty miles of Boston.

The Council and Committees of the Academy may ask one or more Resident Associates to act with them in an advisory or assistant capacity.

RUMFORD PREMIUM

In conformity with the terms of the gift of Sir Benjamin Thompson, Count Rumford, of a certain Fund to the American Academy of Arts and Sciences, and with a decree of the Supreme Judicial Court of Massachusetts for carrying into effect the general charitable intent and purpose of Count Rumford, as expressed in his letter of gift, the Academy is empowered to make from the income of the Rumford Fund, as it now exists, at any Annual Meeting, an award of a gold and a silver medal, being together of the intrinsic value of three hundred dollars,

as a Premium to the author of any important discovery or useful improvement in light or heat, which shall have been made and published by printing, or in any way made known to the public, in any part of the continent of America, or any of the American Islands; preference always being given to such discoveries as, in the opinion of the Academy, shall tend most to promote the good of mankind; and, if the Academy sees fit, to add to such medals, as a further Premium for such discovery and improvement, a sum of money not exceeding three hundred dollars.

INDEX.

- Abbot, C. G., awarded Rumford Premium, 381.
Adams, C. F., death of, 372.
Affel, H. A. *See* Kennelly, A. E., and Affel, H. A.
Allen, G. M., elected Fellow, 384.
Allinson, F. G., accepts Fellowship, 358.
American Academy of Arts and Letters, protest against name of, 359, 361, 363.
Amory, Francis, settlement with heirs of, 381.
Assessment, Annual, Amount of, 381.
Atomic Weight of Praseodymium, A Revision of the, 169, 365.
Atwood, W. W., elected Fellow, 384.
Backlund, Otto, accepts Foreign Honorary Membership, 359.
Bailey, I. W., elected Fellow, 364; accepts Fellowship, 365.
Barrell, Joseph, elected Fellow, 384.
Barrois, Charles, elected Foreign Honorary Member, 385.
Baxter, G. P., and Stewart, O. J., A Revision of the Atomic Weight of Praseodymium. The Analysis of Praseodymium Chloride, 169, 365.
Baxter, J. P., elected Fellow, 384.
Bell, Louis, Types of Abnormal Color Vision, I; The Zeppelin in Peace and War, 361.
Bell, Louis. *See* Verhoeff, F. H., and Bell, Louis.
Bergen, J. Y., elected Fellow, 364; accepts Fellowship, 366.
Birkhoff, G. D., The Restricted Problem of Three Bodies, 369.
Bloomfield, Maurice, accepts Fellowship, 358.
Bodies, Three, The Restricted Problem of, 369.
Bogett, M. T., accepts Fellowship, 358.
Bonnat, Léon, elected Foreign Honorary Member, 365.
Bowditch, C. P., Report of Treasurer 373.
Bragg, Henry, X-Rays and Crystals, 362.
Briquet, John, accepts Foreign Honorary Membership, 359.
Brues, C. T., elected Fellow, 384.
Bumpus, H. C., elected Fellow, 384.
Bumstead, H. A., accepts Fellowship, 358.
Burrill, T. J., elected Fellow, 384.
Calcite, A Critical Discussion of the Crystal Forms of, 287, 372.
Carty, J. J., elected Fellow, 383.
Cell Division in Trichomonas and Allied Flagellates, 365.
Chemical Laboratory of Harvard College, Contributions from, 169.
Chinese Notes, Certain old, 243.
Chinese Paper Money, Certain Specimens of old, 365.
Chinese Species of Pyrus, Synopsis of, 223, 365.
Chrysomelidae, Laboulbeniales Parasitic on, 15.
Clark, H. L., elected Fellow, 384.
Clarke, J. M., elected Fellow, 384.
Clifford, H. E., transferred from Section 2 to Section 4, of Class I., 365.
Clinton, G. P., accepts Fellowship, 358.
Color Vision, Types of Abnormal, 1. Committees, Standing, elected, 382; list of, 387.
Conduction, On Electric, and Thermoelectric Action in Metals, 65.
Conklin, E. G., accepts Fellowship, 358.
Coolidge, W. D., elected Fellow, 383; presented Rumford Medal, 355.
Coral Reefs, The Glacial-control Theory of, 385.

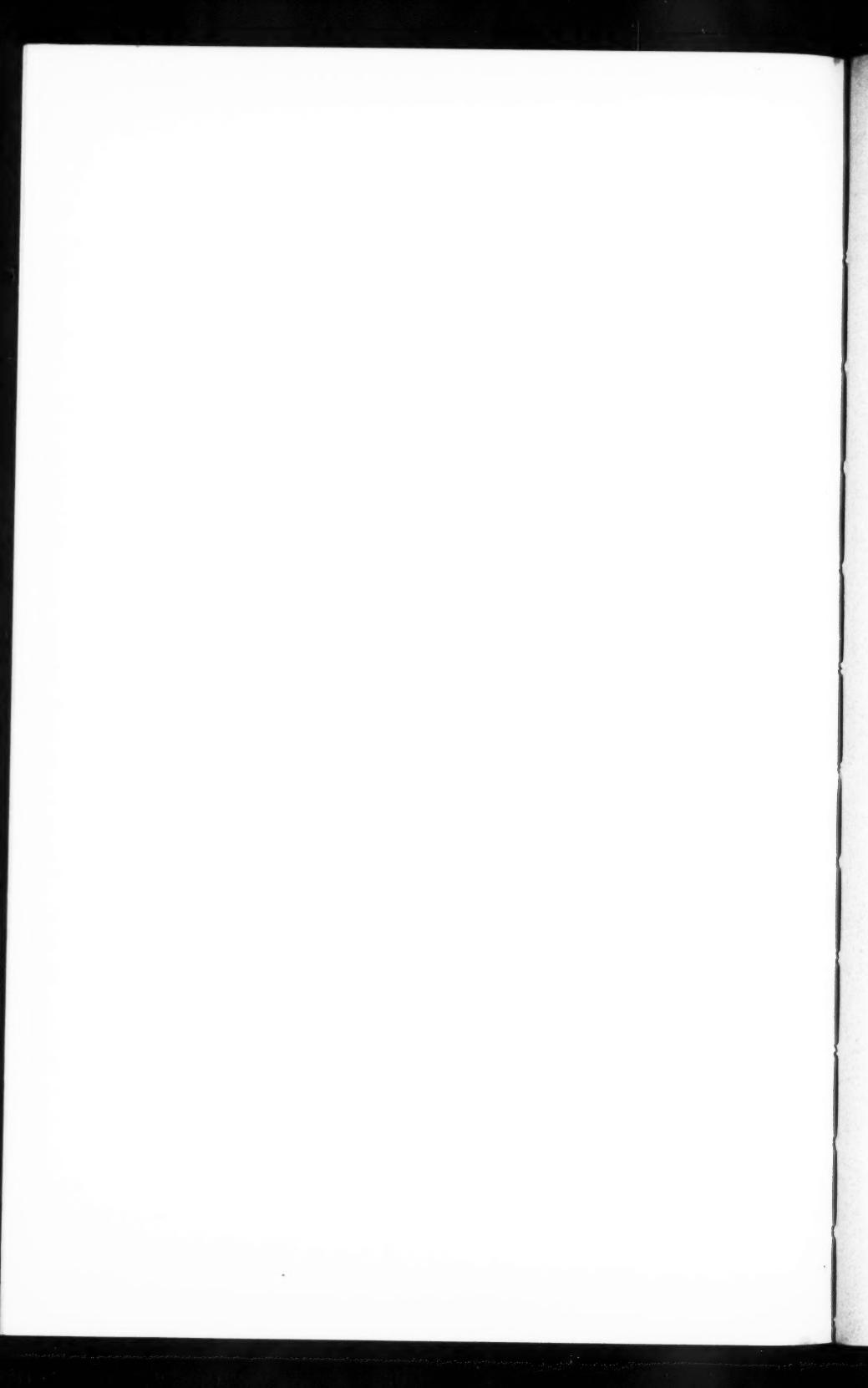
- Coral Reefs, Pacific, A Shaler Memorial Study of, 362.
 Council, Report of, 373.
 Craven, Alfred, elected Fellow, 383.
 Cross, C. R., letter from, asking information regarding Research Funds, 372; Report of Rumford Committee, 376.
 Cryptogamic Laboratories of Harvard University, Contributions from, 15.
 Crystals, X-Rays and, 362.
 Crystal Forms of Calcite, A Critical Discussion of the, 287, 372.
 Daly, R. A., The Glacial-control Theory of Coral Reefs, 385.
 Dana, R. H., elected Fellow, 384.
 Davis, A. M., Certain Specimens of old Chinese Paper Money dating from 850 A. D. to 1425 A. D., 243, 365.
 Davis, W. M., reception on his return from the Pacific, 362; A Shaler Memorial Study of Pacific Coral Reefs, 362.
 Demagnetizing Factors, The, of Cylindrical Rods in high, uniform Fields, 51.
 DeNormandie, James, accepts Fellowship, 358.
 Developables, Minimum, Geometry whose Element of Arc is a Linear Differential Form, with Application to the Study of, 197, 369.
 Dickson, L. E., elected Fellow, 333.
 Drew, E. B., elected Fellow, 384.
 Drew, G. A., elected Fellow, 364; accepts Fellowship, 365.
 Drisko, W. J., accepts Fellowship, 358.
 Drown, E. S., elected Fellow, 384.
 Duane, William, accepts Fellowship, 358.
 Dunbar, W. H., elected Fellow, 364; accepts Fellowship, 365.
 Eddy, H. P., elected Fellow, 364; declines Fellowship, 372.
 Electrodynamics, Classical, Planck's Radiation Formula and the, 129
 365.
 Endicott, M. T., elected Fellow, 364.
 English Language, Note on a Prophecy in Regard to the Future of the, 369.
 Expert testimony, Improved methods of securing, 366.
 Eye, The Effects of Radiation on the, 372.
 Fellows deceased, (9) —
 C. F. Adams, 372.
 A. C. Goodell, 359.
 J. C. Gray, 366.
 G. M. Lane, 359.
 T. R. Lounsbury, 372.
 A. T. Mahan, 362.
 C. S. Minot, 362.
 F. H. Storer, 359.
 F. W. Taylor, 372.
 Fellows elected, (65) —
 G. M. Allen, 384.
 W. W. Atwood, 384.
 I. W. Bailey, 364.
 Joseph Barrell, 384.
 J. P. Baxter, 384.
 J. Y. Bergen, 364.
 C. T. Brues, 384.
 H. C. Bumpus, 384.
 T. G. Burrill, 384.
 J. J. Carty, 383.
 H. L. Clark, 384.
 J. M. Clarke, 384.
 W. D. Coolidge, 383.
 Alfred Craven, 383.
 R. H. Dana, 384.
 L. E. Dickson, 383.
 E. B. Drew, 384.
 G. A. Drew, 364.
 E. S. Drown, 384.
 W. H. Dunbar, 364.
 H. P. Eddy, 364 (declined).
 M. T. Endicott, 364.
 Alexander Forbes, 384.
 G. S. Forbes, 383.
 Philip Fox, 383.
 F. L. Hitchcock, 383.
 E. W. Hopkins, 384.
 J. K. Hosmer, 384.
 Ales Hrdlicka, 384.
 H. J. Hughes, 364.
 Reid Hunt, 384.
 W. D. Hyde, 384.
 C. N. Jackson, 384.
 Dunham Jackson, 383.
 E. S. King, 364.
 C. A. Kraus, 383.
 Kirsoopy Lake, 384.
 C. O. Lampland, 364.
 H. R. Lang, 384.
 A. C. Lawson, 384.

- W. K. Lewis, 383.
 W. C. Loring, 384.
 E. G. Martin, 384.
 S. W. McCall, 384.
 A. D. Mead, 364.
 Leonard Metcalf, 364 (declined).
 S. E. Morison, 384.
 C. F. Park, 364.
 Bernadotte Perrin, 384.
 J. C. Phillips, 384.
 J. W. Platner, 384.
 L. W. Riddle, 384.
 R. W. Sayles, 384.
 Charles Schuchert, 384.
 M. S. Sherrill, 383.
 F. W. Taylor, 364.
 W. R. Thayer, 384.
 E. H. Warren, 364.
 A. W. Weysse, 384.
 Bailey Willis, 384.
 S. W. Williston, 384.
 F. A. Woods, 384.
 J. R. Worcester, 364.
 F. E. Wright, 384.
 R. M. Yerkes, 384.
 Fellows elected, declining Fellowship,
 Leonard Metcalf, 372.
 H. P. Eddy, 372.
 FitzGerald, Desmond, Wanderings
 in the Philippines, 365.
 Flagellates, Cell Division in Trichomonas
 and Allied, 365.
 Forbes, Alexander, elected Fellow,
 384.
 Forbes, G. S., elected Fellow, 383.
 Foreign Honorary Member deceased
 (1) —
 Hugo Kronecker, 373.
 Foreign Honorary Members elected,
 (9) —
 Charles Barrois, 385.
 Léon Bonnat, 365.
 C. J. de la Vallée Poussin, 385.
 J. N. Lockyer, 385.
 Guglielmo Marconi, 385.
 A. S. Napier, 365.
 Ernest Rutherford, 385.
 V. E. DeTimonoff, 365.
 J. H. L. Vogt, 385.
 Fox, Philip, elected Fellow, 383.
 Fur-seal Herds of the Pribilof Islands,
 366.
 General Fund, 373; Appropriations
 from the Income of, 367.
 Geometry whose Element of Arc is a
 Linear Differential Form, with
 Application to the Study of
 Minimum Developables, 197,
 369.
 Glacial-control Theory of Coral Reefs,
 385.
 Goldschmidt, Viktor, accepts Foreign
 Honorary Membership, 359.
 Goodell, A. C., death of, 359.
 Gordon, G. A., accepts Fellowship,
 358.
 Graton, L. C., accepts Fellowship,
 358.
 Gray, J. C., death of, 366.
 Gyroscope, The, in Service, 370.
 Haber, Eugene, accepts Foreign
 Honorary Membership, 359.
 Hall, E. H., On Electric Conduction
 and Thermoelectric Action in
 Metals, 65.
 Hammond, J. W., accepts Fellowship,
 358.
 Harvard University. *See* Chemical
 Laboratory of Harvard College.
 Cryptogamic Laboratories. Jef-
 ferson Physical Laboratory.
 Hemenway, Alfred, accepts Fellowship,
 358.
 Hill, B. H., accepts Fellowship, 358.
 Hitchcock, F. L., elected Fellow, 383.
 Hopkins, E. W., elected Fellow, 384.
 Hosmer, J. K., elected Fellow, 384.
 House Committee, Report of, 380.
 House Expenses, Appropriations for,
 367.
 Hrdlička, Aleš, elected Fellow, 384.
 Hughes, H. J., elected Fellow, 364;
 accepts Fellowship, 365.
 Humphreys, A. C., accepts Fellowship,
 358.
 Hunt, Reid, elected Fellow, 384.
 Hutchins, C. C., accepts Fellowship,
 359.
 Hyde, W. D., elected Fellow, 384.
 Indo-Malayan Laboulbeniales, New,
 385.
 Induction Coil, The Influence of the
 Magnetic Characteristics of the
 Iron Core of an, upon the Man-
 ner of Establishment of a Steady
 Current in the Primary Circuit,
 147.
 International Congress of American-
 ists, (nineteenth) 359.

- Iron Core of an Induction Coil, The Influence of the Magnetic Characteristics of the, upon the Manner of Establishment of a Steady Current in the Primary Circuit, 147.
- Jackson, C. N., elected Fellow, 384.
Jackson, Dunham, elected Fellow, 383.
- Jefferson Physical Laboratory, Contributions from, 51, 65, 129, 147.
- Jennings, H. S., accepts Fellowship, 359.
- Johns Hopkins University, invitation from, 372.
- Kennelly, A. E., and Affel, H. A., The Mechanics of Telephone-Receiver Diaphragms, as derived from their Motional-Impedance Circles, 372.
- King, E. S., elected Fellow, 364; accepts Fellowship, 365.
- Kofoid, C. A., and Swezy, Olive, Cell Division in *Trichomonas* and Allied Flagellates, 365.
- Kraus, C. A., elected Fellow, 383.
- Kronecker, Hugo, death of, 359.
- Laboulbeniales, New Indo-Malayan, 385.
- Laboulbeniales Parasitic on Chrysomelidae, 15.
- Lake, Kirsopp, elected Fellow, 384.
- Lambert, F. D., accepts Fellowship, 359.
- Lampland, C. O., elected Fellow, 364; accepts Fellowship, 366.
- Lane, A. C., Explanation of the Masses of Early Non-Fossiliferous Strata, 385.
- Lane, G. M., death of, 359.
- Lang, H. R., elected Fellow, 384.
- Lawrence Scientific Association, Meeting in conjunction with, 370.
- Lawson, A. C., elected Fellow, 384.
- Lee, Sir Sidney, accepts Foreign Honorary Membership, 359.
- Lewis, W. K., elected Fellow, 383.
- Library Appropriations for, 367.
- Library Committee, Report of, 375.
- Lillie, R. S., accepts Fellowship, 359.
- Linear Differential Form, Geometry whose Element of Arc is a, with Application to the Study of Minimum Developables, 197, 369.
- Livermore, W. R., The Turks and their Predecessors, 372.
- Livingston, B. E., accepts Fellowship, 359.
- Lockyer, J. N., elected Foreign Honorary Member, 385.
- Lodge, H. C., and others, letter from, 359, 364; reply to, 361, 363.
- Loeb, Jacques, accepts Fellowship, 359.
- Loring, W. C., elected Fellow, 384.
- Lounsbury, T. R., death of, 372.
- Lowell, Percival, A Trans-Neptunian Planet, 365.
- Lyman, G. R., accepts Fellowship, 362.
- Magnetic Characteristics of the Iron Core of an Induction Coil, The Influence of, upon the Manner of Establishment of a Steady Current in the Primary Circuit, 147.
- Mahan, A. T., death of, 362.
- Marconi, Guglielmo, elected Foreign Honorary Member, 385.
- Martin, E. G., elected Fellow, 384.
- Matthews, Nathan, accepts Fellowship, 362.
- McCall, S. W., elected Fellow, 384.
- Mead, A. D., elected Fellow, 364; accepts Fellowship, 366.
- Merritt, E. G., accepts Fellowship, 359.
- Metals, On Electric Conduction and Thermoelectric Action in, 65.
- Metcalf, Leonard, elected Fellow, 364, declines Fellowship, 372.
- Miller, D. C., accepts Fellowship, 359.
- Millikan, R. A., accepts Fellowship, 359.
- Minot, C. S., death of, 362.
- Money, Chinese Paper, Certain Specimens of, 365.
- Moore, C. L. E., Geometry whose Element of Arc is a Linear Differential Form, with Application to the Study of Minimum Developables, 197, 369.
- Morison, S. E., elected Fellow, 384.
- Morse, H. N., accepts Fellowship, 359.
- Motional-Impedance Circles, The Mechanics of Telephone-Receiver

- Diaphragms, as derived from their, 372.
- Napier, A. S., elected Foreign Honorary Member, 365; accepts Membership, 366.
- Neal, H. V., accepts Fellowship, 359.
- Newell, F. H., declines Fellowship, 372.
- Nominating Committee appointed, 369.
- Officers, elected, 382; List of, 387.
- Osborne, T. B., accepts Fellowship, 359.
- Oscillator, On the Theory of the Rectilinear, 105.
- Pacific Coral Reefs, A Shaler Memorial Study of, 362.
- Park, C. F., elected Fellow, 364; accepts Fellowship, 365.
- Parker, G. H., The Fur-seal Herds of the Pribilof Islands, 366.
- Peirce, B. O., The Demagnetizing Factors of Cylindrical Rods in High, Uniform Fields, 51; The Influence of the Magnetic Characteristics of the Iron Core of an Induction Coil upon the Manner of Establishment of a Steady Current in the Primary Circuit, 147.
- Perrin, Bernadotte, elected Fellow, 384.
- Peters, E. D., accepts Fellowship, 359.
- Philippines, Wanderings in the, 365.
- Phillips, J. C., elected Fellow, 384.
- Pickering, E. C., letter from, in regard to securing expert testimony, 365, 366.
- Pierce, G. W., Report of Publication Committee, 379.
- Planck, Max, accepts Foreign Honorary Membership, 359.
- Planck's Radiation Formula and the Classical Electrodynamics, 129-365.
- Planet, A Trans-Neptunian, 365.
- Platner, J. W., elected Fellow, 384.
- Praseodymium, A Revision of the Atomic Weight of, 169, 365.
- Praseodymium Chloride, The Analysis of, 169, 365.
- Prescott, S. C., accepts Fellowship, 359.
- Pribilof Islands, Fur-seal Herds of the, 366.
- Problem of Three Bodies, The Restricted, 369.
- Publication, Appropriation for, 367.
- Publication Committee, Report of, 379.
- Publication Fund, 374; Appropriation from the Income of, 367.
- Pyrus, Synopsis of the Chinese Species of, 223, 365.
- Radiation, The Effects of, on the Eye, 372.
- Records of Meetings, 353.
- Rectilinear Oscillator, On the Theory of the, 105.
- Reefs, Pacific Coral, A Shaler Memorial Study of, 362.
- Rehder, Alfred, accepts Fellowship, 359; Synopsis of the Chinese Species of Pyrus, 223, 365.
- Reisner, G. A., accepts Fellowship, 359.
- Research Funds, 372.
- Richardson, R. G. D., accepts Fellowship, 359.
- Riddle, L. W., elected Fellow, 384.
- Rosanoff, M. A., accepts Fellowship, 359.
- Rumford Committee, Report of, 376.
- Rumford Fund, 374; Appropriations from the Income of, 367; Papers published by aid of, 1, 65, 129; Regulations regarding grants from, 376.
- Rumford Medal presented to Joel Stebbins, 355; presented to W. D. Coolidge, 355.
- Rumford Premium, 419; Award of, to C. G. Abbot, 381.
- Rutherford, Ernest, elected Foreign Honorary Member, 385.
- Sayles, R. W., elected Fellow, 384.
- Schuchert, Charles, elected Fellow, 384.
- Sedgwick, Ellery, accepts Fellowship, 359.
- Shaler Memorial Study of Pacific Coral Reefs, 362.
- Shattuck, F. C., accepts Fellowship, 359.
- Sherrill, M. S., elected Fellow, 383.

- Smith, E. F., accepts Fellowship, 362.
 Sperry, E. A., The Gyroscope in Service, 370.
 Standing Committees elected, 382; List of, 387.
 Standing Votes, 419.
 Statutes, 405; Amendment of, 370.
 Statutes, Committee appointed on the Revision of, 361; report of, 367.
 Stebbins, Joel, presented Rumford Medal, 355.
 Stewart, O. J. *See* Baxter, G. P., and Stewart, O. J.
 Storer, F. H., death of, 359.
 Strata, Non-Fossiliferous, Explanation of the Masses of Early, 385.
 Swezy, Olive. *See* Kofoid, C. A., and Swezy, Olive.
 Talbot, H. P., Report of C. M. Warren Committee, 378; Report of House Committee, 380.
 Taylor, F. W., elected Fellow, 364; accepts Fellowship, 365; death of, 372.
 Telephone-Receiver Diaphragms, The Mechanics of, as derived from their Motional-Impedance Circles, 372.
 Thaxter, Roland, Laboulbeniales Parasitic on Chrysomelidae, 15; New Indo-Malayan Laboulbeniales, 385.
 Thayer, W. R., elected Fellow, 384.
 Timonoff, V. E. de, elected Foreign Honorary Member, 365; accepts Membership, 372.
 Trans-Neptunian Planet, A, 365.
 Treasurer, Report of, 373.
 Trichomonas and Allied Flagellates, Cell Division in, 365.
 Trowbridge, John, Note on a Prophecy in Regard to the Future of the English Language, 369.
 True, F. W., death of, 359.
 Turks, and their Predecessors, The 372.
 Tyler, H. W., appointed acting Corresponding Secretary, 355.
 Urban, Ignatz, accepts Foreign Honorary Membership, 359.
 de la Vallée Poussin, C. J., elected Foreign Honorary Member, 385.
 Verhoeff, F. H., accepts Fellowship, 359.
 Verhoeff, F. H., and Bell, Louis, The Effects of Radiation on the Eye, 372.
 Vision, Color, Types of Abnormal, 1.
 Vogt, J. H. L., elected Foreign Honorary Member, 385.
 Wait, W. C., accepts Fellowship, 359.
 Wambaugh, Eugene, accepts Fellowship, 359.
 Warming, Eugene, accepts Foreign Honorary Membership, 359.
 Warren (C. M.) Committee, Report of, 378.
 Warren (C. M.) Fund, 374; Appropriation from the Income of, 367, 381.
 Warren, E. H., elected Fellow, 384; accepts Fellowship, 365.
 Webster, A. G., appointed Librarian, 355; Report of the Library Committee, 375.
 Webster, D. L., Planck's Radiation Formula and the Classical Electrodynamics, 129, 365.
 Weyssse, A. W., elected Fellow, 384.
 Whipple, G. C., accepts Fellowship, 359.
 Whitlock, H. P., A Critical Discussion of the Crystal Forms of Calcite, 287, 372.
 Wigmore, J. H., declines Fellowship, 359.
 Willis, Bailey, elected Fellow, 384.
 Williston, S. W., elected Fellow, 384.
 Wilson, E. B., On the Theory of the Rectilinear Oscillator, 105.
 Wister, Owen, accepts Fellowship, 359.
 Wolff, J. E., reception given in honor of Professor Davis, 362.
 Woods, F. A., elected Fellow, 384.
 Worcester, J. R., elected Fellow, 364; accepts Fellowship, 365.
 Wright, F. E., elected Fellow, 384.
 X-Rays and Crystals, 362.
 Yerkes, R. M., elected Fellow, 384.
 Zeppelin, The, in Peace and War, 361.



306.1

A6
A2h

50—13

Proceedings of the American Academy of Arts and Sciences.

VOL. L. No. 13.—AUGUST, 1915.

RECORDS OF MEETINGS, 1914-15.

OFFICERS AND COMMITTEES FOR 1915-16.

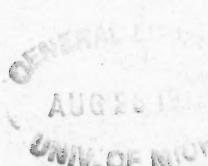
LIST OF THE FELLOWS AND FOREIGN HONORARY
MEMBERS.

STATUTES AND STANDING VOTES.

RUMFORD PREMIUM.

INDEX.

(TITLE PAGE AND TABLE OF CONTENTS.)



(Continued from page 3 of Cover.)

VOLUME 50.

1. BELL, LOUIS.—Types of Abnormal Color Vision. pp. 1-13. May, 1914. 35c.
2. THAXTER, ROLAND.—Laboulbeniales Parasitic on Chrysomelidae. pp. 15-50. May, 1914. 65c.
3. PEIRCE, B. OSGOOD.—The Demagnetizing Factors of Cylindrical Rods in high, uniform Fields. pp. 51-64. June, 1914. 45c.
4. HALL, EDWIN H.—On Electric Conduction and Thermoelectric Action in Metals. pp. 65-103. July, 1914. 70c.
5. WILSON, EDWIN BIDWELL.—On the Theory of the Rectilinear Oscillator. pp. 105-128. October, 1914. 55c.
6. WEBSTER, DAVID L.—Planck's Radiation Formula and the Classical Electrodynamics. pp. 129-145. January, 1915. 35c.
7. PEIRCE, B. OSGOOD.—The Influence of the Magnetic Characteristics of the Iron Core of an Induction Coil upon the Manner of Establishment of a Steady Current in the Primary Circuit. pp. 147-168. January, 1915. 45c.
8. BAXTER, G. P., and STEWART, O. J.—A Revision of the Atomic Weight of Praseodymium. The Analysis of Praseodymium Chloride. pp. 169-195. February, 1915. 55c.
9. MOORE, C. L. E.—Geometry whose Element of Arc is a Linear Differential Form, with Application to the Study of Minimum Developables. pp. 197-222. June, 1915. 75c.
10. REHDER, ALFRED.—Synopsis of the Chinese Species of Pyrus. pp. 223-241. June, 1915. 45c.
11. DAVIS, ANDREW McFARLAND.—Certain old Chinese Notes. pp. 243-286. June, 1915. 90c.
12. WHITLOCK, H. P.—A Critical Discussion of the Crystal forms of Calcite. pp. 287-352 1 pl. August, 1915. \$1.35.
13. Records of Meetings; Officers and Committees; List of Fellows and Foreign Honorary Members; Statutes and Standing Votes, etc. August, 1915. 90c.

VOLUME 49.

1. BRIDGMAN, P. W.—Thermodynamic Properties of Twelve Liquids between 20° and 80° and up to 12000 Kgm. per Sq. Cm. pp. 1-114. 7 folders. May, 1913. \$2.50.
2. PEIRCE, B. OSGOOD.—The Maximum Value of the Magnetization in Iron. pp. 115-146. 3 pls. June, 1913. 60c.
3. LANMAN, CHARLES ROCKWELL.—Buddhaghosa's Treatise on Buddhism, entitled *The Way of Salvation*: analysis of Part I, on Morality. pp. 147-169. August, 1913. 60c.
4. RICHARDS, T. W., and ROWE, A. W.—An Improved Method for Determining Specific Heats of Liquids, with Data concerning Dilute Hydrochloric, Hydrobromic, Hydroiodic, Nitric and Perchloric Acids and Lithium, Sodium and Potassium Hydroxides. pp. 171-199. August, 1913. 40c.
5. WARREN, CHARLES H.—Petrology of the Alkali-Granites and Porphyries of Quincy and the Blue Hills, Mass., U. S. A., pp. 201-331. 2 pls. September, 1913. \$1.30.
6. BLAKE, SIDNEY F.—Contributions from the Gray Herbarium of Harvard University. New Series, No. XLI. pp. 333-396. 1 plate. September, 1913. 80c.
7. PARKER, G. H., and BULLARD, C.—On the Size of Litters and the Number of Nipples in Swine. pp. 397-426. September, 1913. 80c.
8. ROBINSON, B. L., WEATHERBY, C. A., HUBBARD, F. TRACY.—Contributions from the Gray Herbarium of Harvard University. New Series.—No. XLII. pp. 427-517. October, 1913. \$1.40.
9. BIRKHOFF, GEORGE D. The Generalized Riemann Problem for Linear Differential Equations and the Allied Problems for Linear Difference and q -Difference Equations. pp. 519-568. October, 1913. \$1.25.
10. KUTCHIN, HARRIET LEHMANN.—Studies on the Peripheral Nervous System of *Amphioxus*. pp. 569-626. 8 pls. October, 1913. \$1.60.
11. BRIDGMAN, P. W.—The Technique of High Pressure Experimenting. pp. 625-643. February, 1914. 40c.
12. Records of Meetings; Officers and Committees; List of Fellows and Foreign Honorary Members; Statutes and Standing Votes, etc. August, 1914. 90c.

(Continued on page 2 of Cover.)

PUBLICATIONS
OF THE
AMERICAN ACADEMY OF ARTS AND SCIENCES.

MEMOIRS. OLD SERIES, Vols. 1-4; NEW SERIES, Vols. 1-13.
16 volumes, \$10 each. Half volumes, \$5 each. Discount to
booksellers 25%; to members 50%, or for whole sets 60%.

- Vol. 11.** PART 1. Centennial Celebration. 1880. pp. 1-104. 1882. \$2.00.
PART 2. No. 1. Agassiz, A.—The Tortugas and Florida Reefs. pp. 105-134.
12 pls. June, 1885. (Author's copies, June, 1883.) \$3.00.
PART 3. Nos. 2-3. Searle, A.—The Apparent Position of the Zodiacal Light.
pp. 135-157 and Chandler, S. C.—On the Square Bar Micrometer. pp. 158-178.
October, 1885. \$1.00.
PART 4. No. 4. Pickering, E. C.—Stellar Photography. pp. 179-226. 2 pls.
March, 1886. \$1.00.
PART 4. No. 5. Rogers, W. A., and Winlock, Anna.—A Catalogue of 130 Polar
Stars for the Epoch of 1875.0, resulting from the available Observations made
between 1860 and 1885, and reduced to the System of the Catalogue of Publi-
cation XIV of the Astronomische Gesellschaft. pp. 227-300. June, 1886. 75c.
PART 5. No. 6. Langley, S. P., Young, C. A., and Pickering, E. C.—Pritchard's
Wedge Photometer. pp. 301-324. November, 1886. 25c.
PART 6. No. 7. Wyman, M.—Memoir of Daniel Treadwell. pp. 325-523.
October, 1887. \$2.00.
- Vol. 12.** 1. Sawyer, E. F.—Catalogue of the Magnitudes of Southern Stars,
from 0° to — 30° Declination, to the Magnitude 7.0 inclusive. pp. 1-100. May,
1892. \$1.50.
2. Rowland, H. A.—On a Table of Standard Wave Lengths of the Spectral
Lines. pp. 101-186. December, 1896. \$2.00.
3. Thaxter, R.—Contribution towards a Monograph of the Laboulbeniaceæ.
pp. 187-430. 26 pls. December, 1896. \$6.00.
4. Lowell, P.—New Observations of the Planet Mercury. pp. 431-466. 8 pls.
June, 1898. \$1.25.
5. Sedgwick, W. T., and Winslow, C. E. A.—(I.) Experiments on the Effect of
Freezing and other low Temperatures upon the Viability of the Bacillus of
Typhoid Fever, with Considerations regarding Ice as a Vehicle of Infectious
Disease. (II.) Statistical Studies on the Seasonal Prevalence of Typhoid
Fever in various Countries and its Relation to Seasonal Temperature. pp. 467-
579. 8 pls. August, 1902. \$2.50.
- Vol. 13.** 1. Curtiss, D. R.—Binary Families in a Triply connected Region with
Especial Reference to Hypergeometric Families. pp. 1-60. January, 1904. \$1.00.
2. Tonks, O. S.—Brygos: his Characteristics. pp. 61-119. 2 pls. November,
1904. \$1.50.
3. Lyman, T.—The Spectrum of Hydrogen in the Region of Extremely Short
Wave-Length. pp. 121-148. pls. iii-viii. February, 1906. 75c.
4. Pickering, W. H.—Lunar and Hawaiian Physical Features Compared.
pp. 149-179. pls. ix-xxiv. November, 1906. \$1.10.
5. Trowbridge, J.—High Electro-motive Force. pp. 181-215. pls. xxv-xxvii.
May, 1907. 75c.
6. Thaxter, R.—Contribution toward a Monograph of the Laboulbeniaceæ.
Part II. pp. 217-469. pls. xxviii-lxxi. June, 1908. \$7.00.
- Vol. 14.** 1. Lowell, Percival.—The Origin of the Planets. pp. 1-16. pls. i-iv.
June, 1913. 60c.

PROCEEDINGS. Vols. 1-47, \$5 each. Discount to booksellers
25%; to members 50%, or for whole sets 60%.

The individual articles may be obtained separately. A price list of recent
articles is printed on the inside pages of the cover of the Proceedings.

Complete Works of Count Rumford. 4 vols., \$5.00 each.

Memoir of Sir Benjamin Thompson, Count Rumford, with Notices of
his Daughter. By George E. Ellis. \$5.00.

Complete sets of the Life and Works of Rumford. 5 vols., \$25.00;
to members, \$5.00.

For sale at the Library of THE AMERICAN ACADEMY OF ARTS AND
SCIENCES, 28 Newbury Street, Boston, Massachusetts.

